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ABSTRACT

This document contains the following papers on diversity and international issues from the SITE (Society for Information Technology & Teacher Education) 2001 conference: "Using Technology To Support Teaching for Social Justice in a Preservice Program" (Barbara Beyerbach); "Integrating Technology into a Teacher Education Diversity Course" (Ramona Maile Cutri); "Is Anybody Listening? Inherent but Typically Ignored Problems in Distance Learning" (Paula Furr and Ron McBride); "Integrating Human Impact into a Web-Based Multicultural Course for Teacher Education" (Viola Garcia and Linlin Irene Chen); "Developing Intercultural Understanding via the Internet: Canadian Student Teachers and English Students in China Study World Literature Together" (Jim Greenlaw); "Using Internet Technology To Facilitate Anonymous Communication in World Wide Web Delivered Multiculturalism in Education Courseware" (James G. Izat and others); "Diversity through Co-Operation: Creating and Delivering Content in In-Service Teacher Education" (Monica Johannesen and Leikny Ogrim); "'WorldGate': An Attempt To Close the Digital Divide" (Richard Knecht); "Technology and Social Change: Perceptions of Culturally Diverse University Students" (Shane P. Martin and Edmundo F. Litton); "Identifying School Conditions and Teacher Practices that Have Proven Effective in Increasing Mathematics and Reading Achievement for African American Students and Students in Schools with Substantial Minority Student Populations" (Michael McFraizier and M. Danita Bailey); "Using Technology in Early Childhood Environments To Strengthen Cultural Connections" (Mikki Meadows); "Where is the 'Any Key,' Sir? Experiences of an African Teacher-To-Be" (Guillaume Nel and Liezel Wilkinson); "The Digital Divide in Schools: We Can Make a Difference" (Tamara Pearson and Colleen Swain); "Technology Empowers a Diverse Population of Students: Results from a Technology Professional Development School" (Carrie Thornthwaite); and "Linking up through Solar Energy: The Story of the Gelukwaarts Farm School" (Fred Wilkinson and Annette Wilkinson). Most papers contain references. (MES)

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ED 457 823

DIVERSITY AND INTERNATIONAL

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This year's overriding theme for this section is making connections through technology. Technology is connecting teachers to students from universities to public schools, urban areas to farm settings, and countries to countries. The papers demonstrate how projects come alive through technological communication. The diversity in the projects shows that man's desire to connect to others is a basic need. The papers are divided into two basic groupings: connections made by teachers and students in other lands and connections made within the United States.

The first four papers discuss connections from country to country. The writer Greenlaw of Canada at St. Francis Xavier University initiated a Canadian Chinese connection. Canadian students communicate with Chinese students about their understanding of themes, characters, and beliefs in literature selections. This cultural exchange via the Internet provides a powerful vehicle for ESL students to discuss their ideas and develop their language ability. In another experiment, Nel and Wilkinson of South Africa focus on efforts to assist first year students in a developing community with beginning computer classes. This paper focuses on the desire of a whole community to receive direct benefits of its students learning technology. The purpose of learning technology is to help them keep in touch with the rest of the world. The authors discuss the initial problems that can plague novice computer students worldwide. The next paper by Fred Wilkinson and Annette Wilkinson of South Africa discuss how solar energy can be harnessed to develop farm schools in predominately rural areas of South Africa. The project links rural farm schools to the world. Another paper comes from Norway, where Johannesen and Ogrim from Oslo University tell of six universities partnering to offer to its Norway teachers web-based network courses. This seven-year-old Co-operation Network provides seven courses to eighty students in different part of the country. Through these course offerings, teachers receive diversity through co-operation, course content, and communication methods.

The next set of papers shift to interesting research projects in the United States. Here the papers focus on many connections that are being developed from state to state or culture to culture. For example, Knecht of the University of Toledo reported a four-state connection. He discusses attempts to close the digital divide by using the Worldgate Internet School to Home program. His project involves fourth grade elementary students in a program that provides free access to the Internet for a year. Pearson and Swain demonstrate closing the gap within cultures from the University of Florida. They discuss how the computer can be used to close the gap between socioeconomic groups and how to bring equitable learning conditions between groups. The authors discuss three primary areas that influence the digital divide: the areas of frequency of use, the computer experience of students, and technology training. Another paper by McFrazier and Bailey of Prairie View and Texas A&M University identify conditions and teacher practices that have been proven effective in increasing the academic performance of African American students and students in schools with substantial minority populations. The targeted population for the research was reading and math teachers from schools whose Texas Assessment of Academic Skills performance was reported exemplary, recognized, or acceptable. Then the authors Martin and Litton from Loyola Marymount University pilot a study to explore issues surrounding computer technology and social change from the perspective of diverse learners in a university setting. They wanted to find how female students and members of different ethnic groups view the importance of technology for their families.

Cutri from Brigham Young University discusses initial insights gained from integrating technology into a required multicultural education course. She discusses how to critically analyze on-line material if the Internet is to serve as a teaching tool for diversity. Her assignments help students explore other groups from the perspective of three different areas: media, curriculum and policy. The paper by Izat, Hargrave, Brammer, and Williams from West Texas A&M reported the findings of a study conducted in

IR 020 893

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a graduate multicultural course where students send anonymous comments using a web board format. The researchers felt that the students would be more honest with their thoughts and feelings if their comments were sent on web board than a face to face environment.

Meadows from Eastern Illinois discuss the use of technology in the early childhood environment to support the development of cultural competence. The author used four objectives that directed her in identifying specific examples to aid practitioners in developing media presentations suitable for young children. She feels that using technology in a developmentally appropriate manner to facilitate cultural connections with children is a viable way in which to transform current curricula in order to fully integrate, multicultural concepts and develop an understanding of diversity that can last a child a life time. Also, Beyerbach and Russo from State University of New York at Oswego discuss using technology to support social justice in a preservice elementary program. They link foundations and methods issues in teaching social justice.

Connecting urban to suburban students is another way to close the gap. Garcia and Chen from the University of Houston-downtown discuss an online course that presents a unique opportunity for more comprehensive investigation and understanding of urban culture and schools in training future teachers. The online design was to allow students to experience urban complexities resulting from marital, ecological, economic, political, and religious or socio-cultural factors. Thornthwaite from Lipscomb University discuss a study that documented the experiences of a school-university partnership in Nashville Tennessee. The students come from over 100 countries and speak more than 75 different languages. The goal was to promote community instead of isolation in this country.

Finally, evaluating the different methods of communication is important. Furr and Mcbride from Northwestern University discuss how important it is to create a feedback system that would continue to look at the problems that can plague distance learning. It discusses how to effectively incorporate faculty and student feedback into ongoing formative evaluations of distance learning programs.

These papers tell about the new connections that are being made in the 21st century. Technology within the country or abroad presents an interesting perspective.

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USING TECHNOLOGY TO SUPPORT TEACHING FOR SOCIAL JUSTICE IN A PRESERVICE PROGRAM

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Abstract: This article describes how we have attempted to use technology to support teaching for social justice in an educational foundations and in an elementary methods course in our teacher education program. Programs, class activities, and analysis of student work will be shared and implications for practice derived.

Introduction

It is essential that as educators we continue to improve our abilities to develop multicultural, anti-bias, culturally relevant pedagogical practice. The fact that our region, state and country are becoming more culturally diverse is only one reason for this need. If we are committed as teachers, to all of our children, then it is important for us to use curriculum and teaching strategies that reflect the needs and interests of all children. Given that there is increased funding for the enhancement of Math/Science/Technology funding, are there ways this funding can be used to enhance a pedagogy of teaching for social justice?

Recently, we have had opportunity to explore this question, as co-director and participant on a Goals 2000 Preservice Teacher Technology Infusion Project. This paper describes our attempt to infuse computer technology into an undergraduate foundations and an elementary methods course and related field experiences, to support a "teaching for social justice" pedagogy. We will describe the types of learning experiences we sought to craft for preservice teachers and the children they taught, how specific computer technologies had the potential to enhance these with an aim towards teaching for social justice, and where these experiences held promise and fell short of this aim. Implications for technology infusion to support a social justice agenda will be shared.

Significance

How we use computer technology, what technologies and strategies we choose, and whom we engage with them, shapes our pedagogy as well as students' learning experiences. Foundational issues are inherent in any education course, and we have always sought to link foundations and methods issues in our teaching, with an aim towards social justice. Consistent with the Council of Learned Societies in Education's Standards for Academic and Professional Instruction, "The objective of such study is to sharpen students' abilities to examine, understand, and explain educational proposals, arrangements, and practices and to develop a disciplined sense of policy-oriented educational responsibility." (CLSE, 1997, p8). This work articulates a constructivist, social justice pedagogy, describes how computer technology might support such pedagogy, and critically examines preservice teacher learning in the light of these aims. Where the learning falls short (e.g. students' tendency to see computer technology as a cure and great equalizer while at the same time choosing practices that accentuate inequities), strategies for further struggle will be described.

Defining Teaching for Social Justice

The School of Education in which we teach centers "authentic learning for all students towards the aim of social justice" in our conceptual framework. Faculty members are committed to this vision and continuously work to realize it in course and field experiences. The phrase "teaching for social justice" carries with it several key assumptions. First, that there is such a phenomenon as **social justice** and conversely that social **injustice** exists. A claim that we are teaching for social justice positions us at a point of recognizing sites of social injustice and working through our teaching toward a goal of social justice. Given society's dynamic nature and the obscure manifestations of injustice, the work toward social justice is not easily obtainable nor does it have a fixed end. Thus our goal within the School of Education is not necessarily to reach a state of social justice. Rather it is to develop in our candidates the ability to identify social injustice especially within school settings, and the desire and ability to take actions that will cause change leading toward social justice. When we talk about developing ourselves and our students as socially conscious catalysts for change, we acknowledge that we have a responsibility to play an active role in working toward social justice (DeVries & Zan, 1996; Green, 1971; Tom, 1984).

Second, the nature of injustice in our society results in school age students facing "persistent and profound barriers to educational opportunity" (Darling-Hammond, 1995, p. 465). Social injustice means that children are denied opportunities to learn and grow. When we work toward social justice we acknowledge these barriers and make a commitment to transform the educational fabric toward a more fair and inclusive educational setting. "Without acknowledgment that students experience very different educational realities, policies will continue to be based on the presumption that it is the students, not their schools or classroom circumstances, that are the sources of unequal educational attainment" (Darling-Hammond, 1995, p. 465).

According to Bell (1997) "The goal of social justice education is full and equal participation of all groups in a society that is mutually shaped to meet their needs" (P. 3). Teaching for social justice means that in addition to learning about and using "good teaching strategies," we expect our future teachers to learn to use "good" strategies within a context of working toward social justice. Our commitment to social justice has its roots in the efforts of the founder of Oswego State, Edward Austin Sheldon, who prior to establishing this college created a school for poor children in the city of Oswego in 1849, to "teach them that they may become worthy citizens as well as others" (Sheldon in Barnes, 1911, p. 76). A key goal of this school was the "intellectual and moral education and improvement of such poor and orphan children in this city..." (Sheldon in Barnes, 1911, p. 77).

How is the goal of working toward social justice manifested the School of Education? Not only is social justice an end goal of our efforts but it is also an on-going process. This work shows up in our recruitment of faculty and student, our curricula, and in many of our special programs. Given the pervasiveness of social injustice is within our society and schools, the work toward social justice must be equally pervasive in our programs.

Within our curriculum our work toward social justice spans a number of particular approaches ranging from the use of critical reflection and autobiography (Bell, 1997; Ladson-Billings, 1995; Cochran-Smith & Lytle, 1993; Schon, 1983; Noffke & Stevenson, 1995); the development of cultural diversity awareness through many, many levels of multi-cultural education (Banks & Banks, 1993; Sleeter & Grant, 1999; Darling-Hammond, 1998) and anti-bias teaching (Byrnes & Kiger, 1996; Derman Sparks, 1989); examination of issues of oppression including racism, ableism, sexism, classism, and heterosexism, field experiences in culturally diverse settings (Syracuse City Schools, Onondaga Nation Schools, New York City Schools); and requirements that units and lessons in any field experience setting be reflective of cultural diversity and consistent with a social justice framework. We develop a critical perspective within our students and an ability to take action directed toward social change. In developing an awareness and an ability to work for social justice in our students, our own pedagogy must reflect this process (Adams, 1997). Following the pedagogical frameworks described by Adams (1997), we: "balance the emotional and cognitive components of the learning process; acknowledge and support the personal (the individual student's experience) while illuminating the systemic (the interactions among social groups); attend to social relations within the classroom; use reflection and experience as tools for student-centered learning; and value awareness, personal growth, and change as outcomes of the learning process" (p. 30-43).

In the Elementary Education program, the following are some examples of activities which build upon this process and goal of teaching for social justice: In Edo 301 (Foundations of Education) students develop reaction papers where they examine their personal knowledge and attitudes about oppression (race, gender, [dis] ability, class, and sexuality); they trace the flow of forms of oppression throughout the history of education in this country; and they identify issues of gender, race, disability, class, and sexuality in

classroom settings in their field placements. In EED 394-396 (Methods of Instruction and practicum) students infuse their unit plans with evidence of anti-bias teaching strategies; they develop single child-study reports in which they collect evidence of a child's social, cultural, intellectual, and emotional background, and develop an instruction plan which can help the child to flourish; and they critically assess their field placement around issues of social justice. We have attempted to extend these experiences through the use of technology-supported learning experiences as follows.

Using Technology to Support Teaching for Social Justice in the Foundations Course

The strategies used in the foundations course to infuse technology to support social justice pedagogy included the following:

1. E-mail discussions between faculty and students to explore social justice issues raised in class and readings.
2. Listservs on multicultural education, educational standards, and children's literature, which students subscribe to and critique.
3. Web searches for links to social justice sites.
4. Interactive desktop videoconferencing between OSU students and students in JH56 in Manhattan, focused on foundational issues in an urban context.

Supporting Teaching for Social Justice in the Methods Course.

The strategies used in the methods course to use computer technology to support teaching for social justice included the following:

1. Helping students explore equity issues with respect to computer use in schools, and in their own learning. We encourage preservice teachers to examine who took leadership roles in what computer related tasks in their work groups as well as in the elementary classrooms in which they were placed. We examine what factors were related to this (particularly class and gender), and how activities could be structured and designed to include all learners.
2. Choosing technologies that are likely (based on the research) to support the learning of diverse students. For example, research indicates girls prefer to use computers to communicate, or accomplish a task, rather than engage in competitive games. Web sites were selected with an eye towards multicultural opportunities, (e.g. Classroom Connect, Global Schoolhouse).
3. Making Teaching for Social Justice the focus, and using computer technology as a strategy to enhance this aim: For example, learning centers on books of choice dealing with diversity issues (Paley's The Girl with the Brown Crayon, Ladson-Billings' The Dream Keepers, Jones and Newman's Our America, Cora Lee Five's Special Voices, and Victoria Purcell Gates' Other Peoples' Words) incorporate relevant software (KidPix, Inspiration, Hyperstudio) into reader response activities.
4. Students in the course participate in a listserv of class members, where they reflect on course readings and experiences, and link these to their readings. Particular questions are posed to the group to expand their understanding of diversity issues, to challenge injustices or narrow perspectives, and to encourage them to view situations from multiple perspectives.
5. Students conduct a group investigation on a topic relating to teaching for social justice, conducting E.R.I.C. and web searches, and share PowerPoint presentations on their learning journeys.
6. Students construct instruction mini-units on topics such as Civil Rights, Women in History etc. using resources on websites linked to the instructor's website that incorporate anti-bias teaching materials.
7. Students have opportunities to explore multimedia authoring software such as Hyperstudio, Inspiration, and PowerPoint, which draw on multiple modalities and centered on learner- constructed knowledge.
8. Students teach technology infusion lessons in their field placements using such resources as Classroom Connect's Galapagos Quest, which potentially expand students' worlds.
9. Preservice teachers also participate in two-way interactive videoconferencing with a fourth grade, team-taught, elementary inclusion class, observing diverse learners and interacting with them and their teacher.

Conclusions

Technology has the potential to support a teaching through social justice pedagogy by:

1. Facilitating communication among course members and with the broader educational community, unbounded by geographical distance.
2. Allowing for a shared practicum experience designed to highlight teaching for social justice pedagogy, where issues can be discussed interactively, in real time, across contexts.
3. Empowering more sophisticated research across diverse sources of knowledge via web search engines that make accessing multiple types of information more easy.
4. Positioning students as constructors of knowledge that allows for multimedia representations of that knowledge enhancing communication and learning.

Some of the perils we have noticed in attempting to use computer technology to support teaching for social justice are:

1. Students can be enamored with the glitz of computer technology into a non-critical stance in which they see technology as the great equalizer, meeting needs of students with all learning styles.
2. Students exposed to websites of low quality may take information shared there as truth.
3. Students focus on how to use the technology, diverting attention from issues of substance, for example struggling with the mechanics of signing on to a listserv or using KidPix as opposed to engaging in dialogue, or representing their understanding of scenes from a literature selection.
4. Without adequate processing, students peeking into culturally diverse classrooms may reinforce stereotypes they hold about particular contexts/groups.

Teaming as foundations and methods instructors has allowed us the opportunity to infuse foundational and methodological issues through both courses, in and effort to realize the vision articulated in our School of Education's conceptual framework. We have increasingly come to realize the importance of developing critical literacy in our students, regardless of the educational context or medium, in helping them become reflective, authentic learners who actively support teaching for social justice pedagogy.

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Integrating Technology into a Teacher Education Diversity Course

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Abstract: This paper presents initial insights gained from integrating technology into a required multicultural education course. Students were required to include sources from the Internet in an assignment where they explored how a cultural group other than their own was represented in the media, curriculum, and policy. The range of Internet sources students found included easy to locate sites such as the state department of education site to highly specialized sites focused on a particular cultural group. Students' ability to critically analyze the on-line content they found greatly varied. Some students merely summarized content. Others students applied terms and concepts from multicultural education to identify the messages conveyed through the sites and the potential impact of these messages on students and teachers. Greater attention must be devoted to teaching students how to critically analyze on-line material if the Internet is to serve as a teaching tool for diversity.

Introduction

The push to integrate technology into curriculum and pedagogy is being felt by all level of educators—in-service teachers, pre-service teachers, and teacher educators. The majority of us are novices in this area, but many undergraduate pre-service teachers, because they are from a more computer savy generation, actually have more experience than many teacher educators. I thus decided that the best way to respond to the challenge to integrate technology into my university course was to learn from my students. By modifying one of my existing assignments in a multicultural education course, my students became my guides into how diverse cultural groups were represented on the Internet.

This paper presents initial insights gained from integrating technology into an assignment where students explore how a cultural group other than their own is represented in the three areas of the media, curriculum, and policy. The assignment is called a "Snapshot of a Prominent Cultural Group". The students are asked to choose a cultural group other than their own and create a snapshot of that cultural group by gathering visual and narrative representations of the group from three categories: (1) media—newspapers, magazines, television, the Internet, etc; (2) curriculum—textbooks, videos, posters, chapter and picture books, school brochures, etc.; (3) policy—classroom, school, district, state, or federal guidelines or mandates related to a particular cultural group. Students were required to use the Internet to locate evidence of how a particular cultural group is represented in the area of policy. However, students also chose to use the Internet as a source for evidence in the areas of the media and curriculum.

To date, four students have included a total of 13 Internet web sites in their snapshots. In the following sections, I will discuss the range of Internet sources students located and students' varying abilities to critically analyze Internet content.

Different Levels of Digging

In preparation for the assignment, I provided students with a list of eight web resources as initial points of exploration and informally described each site. The range of Internet sources students included in their assignments greatly varied. Some students simply went to the web sites that I had provided and did not dig any deeper. Other students initially went to the web sites that I provided, and then made connections to other sites through various links. Other students used their own knowledge of exploring the Internet and found sites pertaining to their cultural group of focus that were totally unrelated to the original eight sites that I provided. The latter group of students found web pages specifically devoted to a certain

cultural group for instance Native Americans, African Americans, and Middle Easterners. These sites varied from informational resources about the specific cultural group to highly politicized commentary about the status of the cultural group within the U.S. majority culture.

The majority of my students are white, middle class females. Naturally, their cultural backgrounds serve as a lens through which they viewed the politicized material of some of the web sites they found. Many of the web sites were designed to be viewed primarily by members of the specific cultural group with like-minded political opinions. In other words, the materials were aimed at "insiders" to the cultural group rather than designed for "outsiders". Yet, the amazingly easy access provided by the Internet makes it possible for "outsiders" to view "insider" material. Professors must prepare students for experiences such as these. Otherwise, there is a possibility that students will make rash and unfounded judgements about a cultural group based on information that was not designed to be viewed by "outsiders". The consumption of on-line information about diverse cultural groups is influenced not only by students' cultural backgrounds. Additionally, students' varying abilities to critically analyze on-line information also emerged as a finding from this small study.

Analytically Consuming On-line Information

The students' ability to identify and interpret the various messages conveyed by on-line information about diverse cultural groups was greatly impacted by their ability to critically analyze information. Critically analyzing information in my course is defined as applying terms and concepts from multicultural education and social theory to identify the potential impact on students and teachers that societal messages about diverse cultural groups can have. The purpose of such analysis is for my undergraduate students to better understand the experiences and treatment of diverse cultural groups particularly in U.S. settings. Some students, even though they found quite specialized web pages about their cultural group of interest, merely described the on-line content. Other students applied terms and concepts from multicultural education and social theory to systematically identify the messages they perceived from the on-line content. Through the analytic use of the terms and concepts from multicultural education and social theory, these students were able to place the messages that they perceived into a larger social context. This, in turn, allowed the students to do more than just glean information from an on-line source. One student commented, "It seems that there must be some level of awareness about the Native Americans for their culture to be so widely available on the Internet; however, this doesn't seem to translate into tangible powers afforded to them in society." The same student said, "A majority of the lesson plans that I located on the Internet were based on the "food and holidays" approach to multicultural education." (In our course, the "food and holidays" approach to multicultural education is considered a superficial treatment of multicultural issues.) Another student said, "I found they [the Internet sites] were careful to include minority students in their photos. One picture included three white students, a white teacher, and an African American boy. Another featured an African American teacher working on a computer. As trivial as this mere inclusion may seem, it conveys some strong messages. Pictures like these tell the entire classroom that African American students are an integral part of the classroom."

Students who critically analyzed the on-line information evidenced an emergent understanding of the social and political contexts in which information is both created and interpreted. The ability to identify the social and political contexts of information, particularly about diverse cultural groups, is crucial in the education of multicultural students. Teachers must recognize the impact of social and political factors in both the way that multicultural students are schooled and treated in the U.S.

Conclusion

On-line resources offer a great wealth of opportunity for students to learn about how diverse cultural groups are represented in the areas of the media, curriculum, and policy. However, great attention must be devoted to teaching students how to critically analyze on-line material if the Internet is to serve as a teaching tool for diversity.

Is Anybody Listening? Inherent but Typically Ignored Problems in Distance Learning

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Abstract: Desktop Video Conferencing (DVC) is one of newest evolutions indelivering distance learning courses. This paper reports on findings of an ethnographic study conducted in spring 2000 at a mid-sized university thatunderscored the importance of formalized faculty feedback and formative evaluations in planning, implementing, and assessing distance learning programs. The study examined the experiences and perceptions of 163 participants—faculty, students, and support staff—in five DVC teacher education courses offered to undergraduate and graduate students at eight remote sites.

Introduction

During the last two decades, higher education initiatives for distance learning have been accelerating at a rapid pace. Years of research and practice have paved the way for expanding course offerings and, in some cases, degree programs to students at a distance. The dramatic growth can be attributed in part to the collegiate enterprise's ability and desire to modify and broaden its traditional mission to meet the needs of a changing clientele: older students with full-time roles as parents and providers, as adults, and as employees or employers. Colleges are also having to compete with commercial enterprises like Jones International University, which offers its courses entirely over the Internet and became in March 1999 the first such for-profit institution accredited by a regional body, the North Central Association of Colleges and Schools. The Council for Higher Education Accreditation (June 1999) reported an expected 180% increase nationally in distance education students by 2002 with more than two million students as compared to 710,000 in 1998. That figure was matched locally at the researchers' institution, where student enrollment in distance education increased 195% between fall 1998 and spring 2000.

Yet, despite Herculean efforts to implement distance learning courses and entire programs to meet burgeoning enrollments, two vital components to ensure long-term success largely have been ignored by traditional higher education institutions: formalized faculty feedback and ongoing, local, formative evaluations. The intent of this paper is not to enter the "No Significant Difference" debate over traditional classroom versus distance learning. Instead, the focus is to reassert a seemingly ignored obvious: Those who teach using technologies of the trade discover and identify the problems related to teaching students at a distance. They, and not technologists, are in a better position to observe and evaluate the process. A program's success or failure depends in large measure on their experiences while interacting with students, the content, and the technology.

Many distance education programs evolve hastily to meet an observed need or simply to compete with other institutions in a state or service area. What can result is an organizational structure designed to

disseminate information, enroll students, and proctor classes but not designed to provide an ongoing, comprehensive support system for faculty teaching at a distance. Worse yet, seldom are formalized systems in place for faculty to report and obtain immediate, corrective action on problems that occur while teaching at a distance. At the semester's end, valuable information for improving the next round of teaching is lost because no after-action reports are compiled, complete with lessons learned and solutions taken or recommended. Why? Is it that many higher education administrations consider distance learning important, but not a priority or simply that too many do not understand the complexity of teaching at a distance and the need for unique instructional design and specially trained faculty?

The Study

In this ethnographic study, designed to examine and describe incidental learning activities, the researchers employed grounded theory to study the experiences and perceptions of 163 participants—faculty, students, and support staff—in five desktop video conferencing courses offered spring 2000 by a mid-sized university in the rural South. Undergraduate and graduate students at eight rural sites were enrolled in teacher education courses delivered via a synchronous audio and video delivery service. Data were triangulated from field observations, interviews, surveys, participants' journals, and course documents. Simple quantitative measures of participant satisfaction and content analysis of journals and course documents also were used.

Because the researcher is the primary instrument in qualitative research, it is highly personal in nature and dependent upon the skill, competence, and rigor of the researcher for its validity and data reliability (Patton, 1990; Wolcott, 1997). Bogdan and Biklen (1998) said that some characterize qualitative research as "a dialogue or interplay between researchers and their subjects" (p. 7). Bogdan and Biklen said that researchers must become critical thinkers about what they have observed, not mere recording machines (p. 161). As they stated, "The worth of a study is the degree to which it generates theory, description, or understanding" (p. 34). Patton (1990) found that the qualitative-naturalistic-formative approach is especially appropriate for developing, innovative, or changing programs where the focus is on exploring a variety of effects on participants.

Two types of evaluation are typical: formative and summative. According to Bogdan and Biklen (1998), formative evaluation is meant to "improve an ongoing program through continuous reporting of the evaluator's findings" (p. 218). Information is shared quickly, informally, and congenially. Summative evaluations, the most common type, are more formal with feedback rarely given during the course of the research. Instead, final reports are issued to a program official. "These reports are used to make decisions concerning reorganization of the program and allocation of resources" (p. 218). Regardless of the evaluation purpose, feedback on the participants' multiple realities they experienced in a particular setting is an essential methodological concern. With its focus on "participant perspectives," qualitative research seeks to study "phenomena or occurrences as seen through the eyes of those experiencing them, rather than through the eyes of outside observers" (Tuckman, 1999, p. 397).

During the 16-week study, the researchers followed a grounded theory approach by spending considerable time collecting data during fieldwork and considerable time later analyzing collected data. More than 800 pages of typed field notes and data were compiled from which to render an accurate and plausible account through thick description of participants' experiences. Data was obtained from observing 35 desktop video conferencing classes; conducting 81 interviews, organizing and studying 35 instructor and 208 student journal entries, 71 e-mail messages, and 2,520 "chat box" entries; and studying official documents related to implementing the desktop video conferencing program. Although the findings of this study can be generalized only within the settings for the particular courses observed, given the cross-section of students and four different education courses observed, administrators and faculty may be able to generalize the findings to other distance learning settings as well.

Findings

Despite a notable level of frustration expressed by faculty, student, and support staff participants with audio and video delays, insufficient technical training, and inadequate administrative support, the

majority were forgiving in their assessment of the technology and learning environment provided by desktop video conferencing, acknowledging its newness and future potential. Many students cited the convenience of not having to drive to campus and the opportunity to improve computer skills as the prime motivations for current and future distance learning experiences. However, as one student said: "I believe the glitches in the system will be worked out, but if I took another course like this and had the same experience, it would be my last."

Faculty noted the "hard work" associated with teaching at a distance, compounded by inadequate training, no practice time on the system, technical support not readily available, and no curriculum design support available to assist instructors in converting their classes to a new medium. For instructors delivering real-time interactive courses, "the high potential for confusion, chaos or boredom" accentuates the need for faculty to have a host of well-practiced skills (Kearsley, 1995, p.2). One of the teaching faculty commented:

> The teaching/learning situation is one where focus and concentration for extended periods is required. Add to this the extra focus and intensity required for technology use alone, and the result is fatigue, loss of attention and concentration. This extreme intensity is very underestimated by most technology-oriented people because of their facility in the technology. They seldom deal with a very demanding content-oriented course that also places high demands on learning new technologies.

Additionally, the teaching faculty distinguished between technical training on the system and professional development addressing the pedagogy of teaching at a distance. As one said, "Technologists do not understand teaching and learning. They know one way to do things, and this does not always reflect how teaching and learning take place." One suggested that probably only 5% of the faculty should be designated as distance education faculty. "They are like graduate faculty, and they are special. Not every faculty person is suited to distance education. Poor people can damage the program," the instructor said. In faculty exit interviews, the need for faculty focus groups to share concerns, issues, and teaching strategies and for set procedures for the administration to address faculty concerns was strongly voiced. None of these occurred during the study nor had they since the desktop video conferencing program's inception the previous semester. Moreover, no formalized plans for faculty feedback were in place for future semesters.

As Conley (1993) noted, "problems are our friends" and "natural, expected phenomena. There must be a willingness to confront and resolve problems, rather than to deny, ignore, or repress them" (p. 314). Ehrmann (1999), the director of the Flashlight Program, noted that immediate, local, formative evaluations could help guide administrations in making sound decisions and assessing programs. Indeed, the role of technology, evaluation of process, and support for distance education cannot be understated. Without such local, ongoing evaluations, he noted, institutions cannot know whether good practices are on the increase and problems are on their way to being solved. Chute, Thompson, and Hancock (1999) warned against a one-size-fits-all approach to distance learning because each technology has different characteristics, making it more or less appropriate for a given learning need. For this particular university, the researchers found no documented evidence of plans or procedures for ongoing formative evaluations to assess and improve the program.

Conclusions

If higher education administrators want a smooth transfer to "high tech" from "high touch" (the traditional face-to-face instruction and its traditionally associated "bond" between teachers and students), then distance learning must be more than installing the latest equipment and software and cursory faculty training to meet growing student demands and needs. After all, people are by far the single most important factor in bringing about any kind of change, including the adoption of a distance learning system (Chute et al., 1999, p. 84). Effectively introducing distance learning into any organization requires understanding (1) people's current attitudes and behaviors, (2) desired changes, and (3) the process needed to encourage and support such changes. To be effective, distance education must be viewed as a partnership or an enterprise with many parts working toward a common goal (Schlosser & Anderson, 1994, p. 39), with faculty a key component.

Distance learning is fundamentally an educational issue, not so much a technology issue. Educators must guide and shape the process with support and direction from administrators. Those on the "front line" need instructional design support and they need to learn from those faculty who preceded them.

The purpose of the paper was to enlighten educators who currently provide or plan to offer courses at a distance about probable inherent problems that will arise if institutions do not incorporate faculty feedback into ongoing formative evaluations of distance learning programs. Lateral discussions between faculty and program administrators, shared experiences, and documented "lessons learned" are vital to ensure the success of distance learning initiatives.

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Integrating Human Impact into a Web-based Multicultural Course for Teacher Education

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Abstract: Social Sciences-Education, SOSE 3306 Culture of the Urban School, is a prerequisite introductory course required of all students in the teacher preparation program at the Department of Urban Education (UE) at University of Houston Downtown (UHD). The course investigates urban culture as the dominant form of community life in contemporary schools. Students explore characteristics, unique properties, and problems of urban schools. The online course presents a unique opportunity for a more comprehensive investigation and understanding of urban culture and urban schools in training future teachers to facilitate the academic achievement of students from diverse racial, cultural, gender, and social-class groups. The purpose of the paper is to share the proposed instructional telecommunication (IT) format that would meet the same standards, prerequisites, and requirements of on-campus sections.

Purpose and Instructional Design

In the Spring 2000, the authors submitted a proposal "Online Course Development for SOSE 3306 Culture of the Urban School" to the CampusNet Instructional Design Collaborative (COW) of the University of Houston System. The proposal was granted and the funding allowed the authors to participate in a two-day workshop on general online course design issues using WebCT.

The primary goals of the online course are to sensitize students to the problems of urban schools, to develop greater self-awareness and increase problem-solving perspectives. The online design will allow students to experience urban complexities resulting from marital, ecological, economic, political, religious or socio-cultural factors. The online format engages students in individual, group, class projects, presentations, discussions or readings on relevant, current and emerging urban issues. Interacting with each other and schools in urban settings, the students will explore the impact of ethnicity and culture and effective teaching strategies in multicultural settings.

In *Distance Education: A Systems View*, Moore and Kearsley (1996) suggest that "because so many skills are needed to design a distance education course, one of the key characteristics of most successful distance education courses is that they are designed by course teams in which many specialists work together" (1996, p. 6). The Garcia-Chen team will heed this recommendation and plan the online course as a team. One author, who has extensive school-related experience and knowledge with multicultural education, will act as the subject matter expert (SME) and pilot user of the initial versions. This faculty member will contact the students taking the traditional version of SOSE 3306 the semester before officially offering online SOSE 3306. During this time, the instructor will gather comments and bring back feedback for course modification. Another author, who is teaching Educational Computing courses for the department, will provide technical support and polish the final product. Both faculty will collaborate on the

design and development of the online course and benefit from each other's experience. Once the online SOSE 3306 is developed, the authors will team-teach the course, provide a student orientation where they will meet face-to-face, or in real-time, with students at least once during the semester the course is offered.

The supporters of the constructive approach (Jonassen, Peck, Wilson, 1999) to teaching and learning argue:

> technology engages students in meaningful learning, where they are intentionally and actively processing information while pursuing authentic tasks together in order to construct personal and socially shared meaning for the phenomena they are exploring and manipulating. Using technologies to help them articulate and reflect on what they know is the glue that holds personally constructed knowledge together.

Instructional materials, including visual and/or audio materials, will be developed in redesigning the course for web design delivery. It is a University of Houston System decision to deliver web-based course through WebCT. WebCT is a web-based system that combines both one-way and two-way asynchronous and synchronous applications including e-mails, bulletin boards, chat rooms, web pages, calendars, and quizzes/surveys. These activities will be instrumental to students' understanding of the course content. While choosing activities for the online course, the authors reviewed a number of researched designs to support learning communities, both within the classroom and beyond. Harris (1994, 1995) suggested a list of online activities that foster virtual learning communities:

1. Interpersonal exchange, which gives students an opportunity to interact with others from a distance. Examples include keypals, electronic appearances, impersonations, etc.
2. Information collection, which focuses on collaborative, distributed collection, analysis, organization, and presentation of ideas. Examples include information exchange, database collection, electronic publishing, etc.
3. Problem-solving projects, which focuses on individual or group problems. Examples include information searches, social action projects, etc.

The authors will incorporate activities that foster interpersonal exchange, information collection, and problem-solving projects to enhance interactions. It is the intent and hope of the authors that meaningful interaction can be achieved in all categories: learner-content, learner-learner, and learner instructor though careful planning of collaborative course activities.

Course Requirements and Course Units

The proposed course outline is organized into several instructional units. The first unit will be an *Introduction to the Culture of the Urban School.* The students will access the introductory forum on the course bulletin board and become acquainted with key concepts and definitions of Multicultural Education by investigating opposing views of multicultural education and visiting a variety of selected newsgroups and websites. Students are to approach assertions that are made from a skeptic's point of view. They will critically examine the information and compare it to information found in the text used for the course, Banks, J. (2001) Cultural Diversity and Education: Foundations, Curriculum, and Teaching. They are to post to the course bulletin board an evaluation of two of the sites selected.

A second activity will involve students' use of problem-solving skills and multiple perspectives to determine the reasonableness of goals for Multicultural Education (Banks, 2001). Students will submit a proposal for transforming total school environments from centers of stress and anxiety to centers of learning. Students will include an annotated reference list and use the mail function to interact with small groups regarding their proposals. The rationale, goals and need for an understanding of Multicultural Education will be explored. The implications of multicultural training on the human impact that educators have on students, parents, other educators, the community, the classroom, and the world will also be explored.

A second unit will be an *Investigation of Culture and Human Development.* The purpose of the unit is to help students develop greater self-awareness by viewing themselves and their own

group(s) from the perspective of other cultures and different mirrors (Takaki, 1993). The activities are intended to lead students to develop a more inclusive multicultural context by exploring the emerging demographic diversity in American culture: Black Voices, Hispanic Voices, Native American Voices, Asian American Voices, and White Ethnic Voices. Sites from the American Civil Liberties Union, The Equity Center, The Freedom Forum, The National Multicultural Institute, and the Smithsonian, as well as others, will be explored. Brief reports will be posted on the bulletin board for ready access to all.

Attitudes and Values Clarification is designed to reduce prejudice, discrimination and conflict so that future teachers are sensitive to problems and conflicts in urban schools. After an initial period of investigation of factual data collection related to racial, ethnic and cultural diversity, the students will investigate their own personal values, beliefs and attitudes. Students will be assigned a number of activities that will heighten their cultural awareness (Noel, J., 2000). The students will share information by identifying a number of positions that can be taken on an issues (e.g., affirmative action, busing to alleviate segregation, interracial dating). A personal perspective will also be attained by student responses to self-awareness surveys. One will be administered at the beginning of the semester and another one will be administered at the end of the semester so that students can ascertain whether their beliefs, values or attitudes have changed during the course of the semester. It is hoped that activities in values clarification will sensitize students to do reflective teaching and to become more aware of the problems of urban schools.

A fourth unit, *Implications for Effective Practice: Teaching and Learning* entails a team project in which students investigate and assess a selected urban school setting. On site visits and data collected from the Academic Excellence Indicator System (AEIS) reports (http://www.tea.state.tx.us/perfreport/aeis/) would be included in the project report. The students would explore a school district's website, and the Texas Education Agency (TEA) school rankings based on student performance. The AEIS reports provide a great deal of performance information about every public school and district in the state. These reports also provide extensive profile information about staff, finances, and programs. Students will determine, as much as possible, indicators of declining academic performance, increases in dropout rates, crime and conflict, or other factors that positively or negatively impact that selected school community. Group discussions through chatboards and online connections would facilitate the group project.

A final unit on *Teaching and Projects* would allow students through a process of inquiry, decision-making, and use of social action skills to suggest curriculum and teaching strategies for a transformative curriculum for empowerment (Banks, 2001) for the selected school setting. The students are required to fully integrate the human impact into this Web-based multi-culture course for teacher education. Additional resources available to the students to complete this final project would include: the reading text, chat board discussions, puzzles and suggestions made on a week-by-week calendar.

In addit.on to the units of study, the students will be required to complete the assignments and projects that fully integrate the human impact of the course content, discussions, and theoretical frameworks in a Web-based multicultural course for teacher education. A week-by-week calendar will inform the students of the integrated instruction using course texts, links to related sites and Internet activities.

Technical Implementation of Online Resources

The online course will be offered via computer modem, using e-mail, listservs, and the Internet. The course may also be supplemented by videotapes for "homeviewers."

World Wide Web Hyperlinks

The online version of SOSE 3306 Culture of Urban Schools will provide quality World Wide Web Hyperlinks including:

- web pages of research findings published by local researchers in the fields of sociology, anthropology, and education
- major community and historical web sites in the US

- major culture-related web sites hosted in foreign countries
- collections of culturally responsive lesson plan archives
- national cultural awareness events such as Women's Month, Black History Month etc. hosted on the White House homepage

World Wide Web hyperlinks are non-linear and thus flexible in terms of how they can be used. Students can pursue their interests by conducting research on the Internet. The content can be expanded and updated as the core fields change.

Internet Discussion

The electronic mail, chatroom, bulletin board, and listserv functions of the online model provide an environment in which both the diversity of groups and the uniqueness of individuals are recognized and celebrated. Under the instructors' moderation, students can discuss how appropriate instructional methods and resources help students compensate for differences. Students also have an opportunity to explore the implications of recent developments and issues in multicultural education on instruction by engaging in professional conversations with community leaders and experts in the field of multicultural diversity.

Chatrooms allow students to type messages in a virtual room and the message appears on other viewers' screens almost instantaneously. Chatrooms allows for open discussion and instant feedback, which makes it an ideal medium for effective interaction. However, faculty who used the chatroom feature of WebCT have had mixed responses. First of all, it requires an established time for meetings that means that schedule conflicts or equipment malfunction may cause a missed meeting. Another disadvantage is that the answers are instantaneous and may not involve in-depth thought. If the dialog is going on too fast, students can easily lose track and also lose their interest. The authors are taking this input into consideration during the design and development process.

Online Case Studies

The case study approach has been used extensively to conduct research on ethnographic issues and critical pedagogy. The quality and quantity of texts, calendars, timelines, pictures, photos, maps, manuscripts, and case study descriptions that can be scanned and posted onto the on-line version of SOSE 3306 will far surpass what can be done with textbooks, lectures, and hand-outs in the traditional approach.

Other Technologies

Other research also suggest new technologies such as Java/JavaScript, 'half-based software," ActiveX/VBScript, and IRC to make Web pages interactive (Cafolla & Knee, 1999; Box, 1999). Yet, since it may involve more development time, and they may not be fully functional on the WebCT platform, the authors are not currently considering these options.

Summary

The proposed online version of SOSE 3306 Culture of Urban Schools is (1) non-linear and thus flexible in terms of how it can be used, (2) extensive, which means more information can be covered in a typical semester thus allowing instructors and students to select what they want to explore, and (3) expanded and automatically updated through hyperlinks to resources on the Internet that are regularly revised and updated. The authors believe that the course will create a content rich web-delivered course. However, Lai (1997) warns that the web should be more than "an electronic lecture-notes turner" or the self-paced Computer-Assisted Instruction (CAI) of the 70s. We hope that the design of the course can add the interactivity that teachers need in a learning situation.

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Developing Intercultural Understanding Via the Internet: Canadian Student Teachers and English Students in China Study World Literature Together

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Abstract: In this project English students at a Chinese university and Secondary English Education student teachers at a Canadian University used e-mail to discuss with each other their interpretations of short stories from fifteen different countries. The purpose of this activity was to develop the participants' intercultural understanding and literary critical skills through collaborative responses to world literature. At the same time the Canadian student teachers gained valuable experience at tutoring ESL students. Through the application of postcolonial pedagogical theory, I attempt in this paper to explain what the students have learned from each other.

Introduction: Background to the Project

In 1985, I moved to China for a year to teach English to university students. It was an experience that permanently and profoundly changed the way I viewed my role as an educator and global citizen. Currently, I am an English Education professor in Canada. Some of my student teachers over the past few years have chosen to teach in Asia upon graduating with their Bachelor of Education degrees. When I am asked by aspiring English teachers what it is like to work in China, what are the best books to read and what preparations are necessary in order to cope with the living conditions and culture shock, I have not been able to provide satisfactory answers to these questions. I find conversations about teaching in China to be both exciting and frustrating: exciting because I know that teachers who are going to China will have fascinating experiences, but frustrating because I have not been able to explain to them the significance of my own encounters with Chinese students. Books devoted to preparing Canadians for work in Asia talk about the importance of cultural sensitivity and effective intercultural communication, but they rarely address the significance of how Canada's historic relations with Asian countries may impact upon our lives as teachers in contemporary Asia. Canadian teachers' Eurocentrism is just one aspect of our identities which may undergo a transition as we travel to teach in Asia. When we return home, our transformed identities can cause us to view our roles as educators in Canada with a different awareness. One way to begin to prepare English teachers to work in Asia, and to prepare them to be ESL teachers in Canada, is to introduce them to Asian students via the Internet. During the past decade I have involved Canadian high school students and student teachers in intercultural e-mail exchanges with students in Asia (Greenlaw, 1992, 1997). I have also had the pleasure of taking students on a service learning trip to China, so I realize that cultural exchanges via the Internet are certainly no substitute for actually living and working in countries such as Japan, Korea, and China. Nevertheless, e-mail communication is an important first step in preparing Canadian student teachers to communicate more effectively with Asian students. In the following pages I make use of the postcolonial notion of transnational literacy to describe the kinds of insights that Chinese students of English and Canadian student teachers have gained from each other by sharing their interpretations of short stories from around the world.

In May 1996 and June 2000, as a guest lecturer and researcher in Wuhan City on the Yangtse River in Eastern China, I worked closely with Professor Yuan Xuefen, at the English Department of the South Central University for Ethnic Communities (SCUEC). Most of the students at the SCUEC are members of China's ethnic minorities such as the Tibetans, Hui, Miao, and Tujia. There are approximately one hundred million minority people in China. As Professor Yuan and I considered how we might connect her students in Wuhan with my student teachers in Canada, we decided that a course in short stories from

around the world might prove the most effective way to encourage them to share their ideas with each other via e-mail communication about global issues. Thus we decided to provide the students with the opportunity to read together short stories from Trinidad, Japan, Botswana, Brazil, New Zealand, India, Canada, Australia, The USA, Mexico, Ghana, The Philippines, Russia, Singapore, and China. One purpose of this project was to develop the participants' intercultural understanding and literary critical skills through their collaborative responses to the stories. Some of the topics which the students discussed included: Art and Artists, Family Relationships, The Critique of Class, Race Relations, Ethnic Identity, and Social and Cultural Criticism. Another purpose of the project was to provide the Chinese students with an opportunity to develop their writing skills as they composed written responses to world literature with the help of their Canadian partners. At the same time we hoped that the Canadian student teachers would gain useful experience at tutoring ESL students as they guided their Chinese partners through their reading and writing activities.

Transnational Literacy

One of China's leading postcolonial theorists, Wang Ning (1997), believes that there are two views of the West which are held by the Chinese. To some people the West's material civilization and culture are considered superior to Oriental culture, but to other Chinese people the West is perceived as the enemy.

> To these people, the West is in decline, its outward prosperity merely a false mask through which we can see its implied crisis; to them the twenty-first century will surely be the century of China or the Orient, and Oriental culture is superior to Western culture and is bound to dominate the world. In short, the West to these people is nothing but a hell and even an evil spirit. Obviously, the two attitudes show that if we could have dialogue with the West, this kind of dialogue is by no means equal: either Chinese culture dominates or is dominated. Will there be no other way out of these simple modes of thinking characterized by binary opposition? (p. 64)

If both Chinese and Canadian students are to overcome this tendency to see China's relations with the West in the oppositional terms which Wang Ning has identified, then they need to develop a form of literacy that causes them to reflect quite deliberately upon the gradations of difference that exist between Canadian and Chinese perspectives on global issues. Transnational literacy, a term coined by postcolonial theorist Gayatri Spivak (1993), involves the ability both to move beyond simplistic, stereotypical misunderstandings of another person's culture and to begin to view one's own culture through the eyes of that person. Professor Yuan and I observed our students attempts to help each other interpret the short stories by relating the problems of the characters in various countries to similar situations in their own lives and countries. At the same time, my student teachers' experiences as cultural border crossers caused me to consider how potential English teachers can come to know their students not simply as linguistic problems to be solved but as global citizens with complex needs and interests. This project helped them to rethink their own assumptions about global issues with the the help of their Chinese friends.

We organized the students into groups of four so that a pair of Chinese students could work with a pair of Canadian students. According to Marion Crowhurst it is important to use cooperative groups when teaching ESL in heterogeneous and multicultural classrooms. "Classrooms should be organized to facilitate interaction and collaboration in the interests of language learning" (Crowhurst, 1994, p. 279). Thus the two Chinese students in each group shared their ideas with each other before they sent their weekly interpretations of stories to their partners in Canada, and the pair of Canadian students discussed with each other what they should say in reply to the Chinese students. Each week the Chinese students wrote a 300-word essay in response to a story. The stories were grouped according to themes, and the students focussed on each theme for two or three weeks. Professor Yuan and her colleagues in the English Department at SCUEC had warned me that the Chinese students were not interested in conducting detailed literary critical analyses, but that they preferred instead to carry on issues-based discussions. So the questions which my students developed to help initiate discussions were intended to identify themes and issues, and to help the Chinese students to relate the stories to their personal experiences and cultural identities.

The Magic Chalk

The story, "The Magic Chalk," by Japanese writer, Kobo Abe, is a surrealistic tale about an artist named Argon who discovers that the pictures he draws with his magic chalk literally come to life. For example, Argon draws his representation of the perfect woman and calls her Eve. When Eve steps out of the picture and begins to talk, however, it turns out that she is actually Miss Nipon, and that she has strong ideas of her own about her purpose in the world. This Eve has a realistic appreciation of her market value and has no intention of conforming to Argon's fantasies. While the Chinese students were all very perceptive in their interpretations of the relationship between Argon and his artistic creations, they were even more astute in their explanations of the artist's power to change the world. In the following paragraph, we can see how the Chinese students, Shumei and Huifang, have responded personally to a question which my students asked about what kind of world they would create if they possessed Argon's chalk.

> If I had the power of Argon, I would design the world as the following. Firstly, there would be less population in the world, especially in China. Secondly, the world would be just like a carpet of green grass with no pollution and careless littering. In that case, the seas and oceans would be blue, the air would be fresh with fragrance. Lastly, I hope there would be more peace reports and no war abuses at all.

Their Canadian partners, Barb and Melanie, then replied that they particularly enjoyed these ideas of Shumei and Huifang about the world they would design if they had Argon's power. Then they proceeded to point out that Canada, too, has problems such as pollution to confront.

> Pollution is a big problem everywhere these days. Actually, there is a badly polluted area in our hometown of Sydney. Decades of steel making resulted in the pollution of a creek and pond area in which children once played. This area has come to be known as the "Tar Ponds," because the water has turned black, oily and thick.

The theme that the students were considering in this story was the role of art and artists in society, but the students soon moved beyond discussions about the utopian and dystopian imagery in Abe's story and into analyses of the role of artists in their own societies. Kobo Abe's story raises issues about the power of artistic representation. For instance, Huifang and Shumei felt very strongly that while artists and writers cannot directly improve the masses, they can still inspire people to change through various forms of artistic and literary representation.

> Luxun, a famous writer in China, once studied medicine in Japan, because he thought he could make the nation stronger. But later he changed to start a literary career for the minds of the Chinese people were weak at that time. He came back to raise the fighting spirits of the whole nation in the anti-Japanese War.

The postcolonial teaching strategy which was employed in the above exchange involved decentering the classroom. Neither Canadian nor Chinese perspectives dominated the discussion. Instead, a genuine sharing of perspectives helped both sets of students to understand Abe's theme of the role the artist plays in improving society.

The Third Bank of the River

As the students read together the story, "The Third Bank of the River," by Brazil's Joao Guimaraes Rosa, they consider the theme of family relationships. This story is about a father who decides to leave his grown children and wife, and to spend the rest of his life floating in a canoe on the river. The Canadian student teachers, Neil and Wayne, were both committeed to going to China with me for their final practice teaching experience, so they were particularly interested in using their communications with their Chinese partners to learn more about China's cultural context. One of the questions which they asked the Chinese students, therefore, was: " What does the symbol of the canoe mean to you? In what ways does it help you to understand the effect of Father's departure on each of his family members?" In their response, Alice and Helen in China asked a question of their own to Neil and Wayne:

> Father was a serious man, and he wouldn't show his affection easily. He just buried it deep in his heart. His sailing, in our opinion, was to fulfill a promise or to chase a dream. There we have a question, "Who is Noah?" It seems to us that Noah and Father have something in common. Can you help us?

In the following answer to Alice and Helen which Neil and Wayne provided, notice how careful they were to choose the right words to communicate what they thought their Chinese partners might want to know about Noah. Notice, as well, that they continued to engage Alice and Helen in a dialogue in order to learn more about Chinese culture.

> Noah is one of the best known folk stories in our culture. A long time ago people on the Earth were behaving badly and God was upset with them. He ordered Noah to build an ark, a big boat. God flooded the earth with 40 days and 40 nights of rain. Noah's job was to take two of each animal on the boat to keep each species alive. The flood was like a bath cleaning the filth from the earth. Many cultures have similar stories. Are there any stories that are similar to the tale of Noah in Chinese culture that you are aware of? We would be interested to hear about them.

Another question which the Canadian students raised about the story concerned the problem of homelessness. They explained that there are millions of people around the world who, like Father in this story, end up living alone at the margins of society. In Brazil, for instance, where the story takes place, millions of children live unprotected on the streets of the major cities. They pointed out that in Canada people like Father are called homeless. It is against Canadian law to force these people to live indoors if they do not wish to do so. So some homeless Canadians freeze to death each year on city streets in the winter. Then the Canadian students asked, "What are some of the reasons why people become homeless? Why do you think Father decided to leave his family in this way? What should countries such as Canada, Brazil, and China do for homeless people such as Father?" In another group, a Chinese student proposed the following answer.

> The story happened in Brazil, but the same story takes place in every corner of the world. The causes that make people homeless are various, such as a lack of understanding, lack of affection, pessimism, natural disaster and wars. In China, there is a small basic organization called the neighborhood committee whose duty is to assist to solve the family problems. For example, if a couple is quarreling severely, the committee members will act as a mediator to calm them down. If the child drops out of school for poverty, the committee will appeal to the communal residents to donate money for this child. The existence of this organization remarkably reduces the chances of becoming homeless. I think this is the measure that other countries should adopt.

Postcolonial theorists (Said, 1993) have argued that Western intellectuals tend to represent Asian countries such as China in essentialist terms. So, if Europeans and North Americans are industrious and honest, then Chinese people are considered to be the opposite, that is, lazy and deceitful. By comparing homelessness in Brazil, with the situations in China and Canada, the Chinese and Canadian students were able to learn more about their distant partners' societies. Such intercultural communication can help to reduce the essentialist notions of China and Canada that these students may have held before engaging in this sharing process. The insightful social criticisms by both the Chinese and Canadian students in the above messages and in many other communications about the fifteen stories made it impossible for either the Chinese or the Canadians to see their partners in one-dimensional, essentialist terms.

Dhowli

As the students read the story, "Dhowli," by the South Asian writer, Mahasweta Devi, they discussed the problems of class and gender discrimination in India. There are several references to castes throughout this story. The young woman, Dhowli, is an untouchable, a member of a low caste, who must struggle to survive after the Braham boy, Misrilal, fails to marry her when she becomes pregnant with his child. At the beginning of the story old Parashnath questions Dhowli's intentions in wanting to marry Misrilal: "What does she think? An untouchable, Dusad girl can make a Brahman give her home and

food'". To determine what the Chinese students thought about Dhowli's predicament the Canadian students asked them to describe the Brahman caste and compare it to Dhowli's untouchable caste. They also wanted to know: "Why do you think Dhowli's own people turn their backs on her?" and "In your opinion, how should society treat unwed mothers?" When Neil and Wayne posed these questions, Helen gave the following reply concerning the plight of unwed mothers in China:

> Most of us almost hold the same opinion as Dhowli's people do. We think that if one is forced to, she is worthy of sympathy; if not, she is not. People will think that if the girl is unwilling, how can the boy have the opportunity. Thus, they always put the blame on the girl. However, the real victim is the girl. If this happens, it will be very difficult for her to face the people and the world. So we should not discard them but help them and encourage them to live a new life again. I remember that, several years ago, I watched a film that talked about unwed mothers. In the film, there was a man who set up a home for them and offered them jobs to kill the time. They lived together just like a big and warm family because they had similar experiences. Gradually, they learned from their life in the unwed mothers' family that they are useful and the society needs them and they need the society. They were encouraged to go on and finally stepped into the society again. Here, I don't mean we should imitate this. I just want to tell those who discriminate against them that they are also human and they also need attention and love as we do.

In this story, Dhowli suffers from multiple oppressions. She is discriminated against both because she is a woman and because she is a member of a lower caste. One of the goals of postcolonial pedagogy is to encourage students to critique for themselves the injustices which result from classism and sexism. Clearly, in the above excerpt from Helen's response, she demonstrates a strong awareness of the unjust treatment both of Dhowli and of unwed mothers in China.

The Loons

In this final story, "The Loons," by Canadian author, Margaret Laurence, the students had the opportunity to discuss the problems of marginalization and racial discrimination that are experienced by hybrid cultures (Bhabha, 1994) such as Canada's Metis people. "The Loons" focusses on the relationship between a Scottish-Canadian girl named Vanessa and her Metis classmate named Piquette. In this tragic tale, Vanessa is puzzled by the fact that Piquette does not enjoy associating with her when Vanessa's family takes Piquette with them to their summer cottage. Piquette suffers from tuberculosis, and Vanessa's father is the doctor who must help her to survive the disease. Vanessa's father takes Piquette with them for the summer so that he can help her to rest and heal. As she tries to coax Piquette to come with her to see the loons, Vanessa remarks: "My Dad says we should listen and try to remember how they sound because in a few years when more cottages are built at Diamond Lake and more people come in, the loons will go away." The Chinese students discussed the ways in which the Metis were suffering from the same plight as the loons. When the Canadian student teacher, Janean, who is herself a member of the Mi'kmaq aboriginal community in Nova Scotia, asked her partner, Xie Si, what she thought would have been different about the story if it had been narrated by Piquette, Xie Si had this to say about the treatment both of Piquette in particular and of minorities in general around the world.

> If this story was written by Piquette, the tone must have been gloomy and full of fear. Piquette felt helpless and sad because of the discrimination and other various difficulties confronting her and she was filled with fear because she wasn't sure of her future or even reluctant to face it, which was doomed to be miserable and hopeless. Not only the Metis people in Canada but also the minority groups around the world are immersed in trouble. Their most serious problem is discrimination from society. The public view them as strange and inferior species. The society does not provide them with sufficient opportunities for the individual and collective development. Their beliefs and traditions are despised and laughed at. Their living conditions are deteriorating and they are badly educated which deprives them of all the chances of

promotion, even survival. They are isolated from the society and are not understood by people.

As this response illustrates, one final strategy of postcolonial pedagogy which proved to be significant during the students' intercultural communications, involved enabling students to perform a critique of racism. Because many of the students in the SCUEC are members of China's ethnic minorities, they possessed a strong appreciation for the plight of other ethnic minorities around the world. Given the opportunity to share their feelings about this issue with students such as Janean in Canada, they were able to express themselves powerfully. Their communications were not simply literary or linguistic exercises, but were opportunities to establish strong positions about their cultural identity.

Conclusion

It is difficult to capture in a few pages the richness of the communications which took place between the Chinese and Canadian students. From these limited examples, however, it should be clear that intercultural communication via the Internet can provide a powerful vehicle for ESL students to develop their abilities to express who they are, and for student teachers to learn more about the thoughts and feelings of English students from various cultural communities. Given the large percentage of ESL students in Canadian schools, and given the fact that many new Canadian teachers are choosing to spend their initial teaching years abroad, it seems prudent to provide student teachers with authentic learning experiences in which cultural differences and global issues can be explored.

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Using Internet Technology to Facilitate Anonymous Communication in World Wide Web Delivered Multiculturalism in Education Courseware

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Abstract: This paper is a report on the findings of a study conducted on a graduate level multiculturalism in education course. Data collected from a world wide web based anonymous comments submission technology were coded and analyzed simultaneously by three researchers. Findings indicate that approximately of the 97.1 percent of students enrolled in three consecutive semesters responding to a statement which sought their perceptions of current efforts toward multiculturalism in education," 56.5 percent of responses were found to be either clearly positive or positive, while 40.5 percent of responses could be considered negative or clearly negative. It is postulated that the provision of a consequence free communication facility has provided students with the opportunity to make authentic comments about sensitive multiculturally related topics.

Introduction and Review of Literature

Education students are increasingly realizing the importance of multiculturalism. In part, because the country's cultural dynamics are rapidly shifting. By the year 2035, the population is projected to be 358 million, with people of color making up about 41 percent. By mid-century the total is projected to be 394 million, with people of color about 48 percent of that total (Tomes, 1998). The resulting changes will affect the general population faster than they will the field of education. Still, there are always some changes apparent. For example, while there is disagreement over how significant an influence Black History Month has had on what students learn, most educators and experts agree it has affected school curricula (Kennedy, 1998).

In order to further test theories of exposure effects, much of the research into prejudices and ideologies have involved group decision support systems (GDSS). In essence GDSS provides a structured

process by which information-opinions are collected from the group, analyzed and fed back for final discussion. A typical method of surveying individuals might place participants in a large room with around 40 seats. At each chair there is a microcomputer, which enables every participant to interact with the information discussed simultaneously. After participants submit their ideas regarding the topic of discussion, the computer sorts the ideas, and then the participants will then vote or comment on which ideas they like or they dislike.

The anonymity of the GDSS system was thought to help shy or passive team members to voice their opinions. It was also hoped that the anonymity would increase participants' honesty because it would eliminate negative consequences. However, support for such benefits has proven weak. The use of the anonymous methods of communicating biases does not assure increased honesty. When Postmer and Lea (2000) studied the effect of anonymity, they found that in GDSSs, their meta-analytic found no advantage to anonymous reporting. The only reliable effect of anonymity was to lead to more contributions, especially more critical ones. Even when the role of anonymity is examined in the collection of surveys regarding drug use, it appears that participants in the anonymous survey have none or only slightly higher reporting rates than those taking confidential surveys (Bjarnason & Adalbjarnardottir, 2000); O'Malley, Johnston, Bachman, & Schulenberg, 2000).

It appears, as Postmes, Spears, and Martin (1999) argue, that computer-mediated groups, such as GDSSs, while providing anonymity still involve social influence and social identity. In short, when people are together, even when making comments that cannot be traced to themselves, they will champion ideas common to their observed group. Stereotyping, ingroup favoritism and attachment to the group are not eliminated by GDSSs.

The limitations of GDSSs have led authors such as Clark and Maynard (1998) to advance the use of the internet for sources of analyses. They believe that the Internet is underexploited for its capacity to aid analysis, and advocate making survey data more easily available online to all potential users. Such tactics would be especially useful when surveying sensitive information about which participants might feel uncomfortable regarding their positions.

Method

Participants

The subjects for this study were drawn from three online graduate Multiculturalism in Education courses taught during three consecutive semesters from the Fall, 1999 through Summer, 2000. A total of 105 students were enrolled in these three sections, of which 102 replied to the statement posed yielding a response rate of 97.1%. Of students enrolled in Multiculturalism in Education from Fall 1999 to Summer 2000, 71.4 percent were female (average age 37 years), and 28.6 percent were male (average age 35 years). 1.9 percent of enrolled students reported their race as African American, 2.9 percent Asian American, 92.3 percent Euro-American ancestry, and 2.9 percent Hispanic American.

Data Collection

The online course presentation is organized into instructional units each of which takes as its topic one identified culture in the educational setting (e.g. Students of Color, Gender, Sexual Orientation, etc.). Each unit presents to the student relevant information collected from the World Wide Web, the text and the professional literature and is organized into four web pages (Introduction, Professor's Comments, Activities, and Wrap Up). Once each student has read the introduction and professor's comments pages, and has visited the web sites linked to each unit, they then read and respond to the learning activities on the activities page.

In addition to traditional assignments, students find an "Anonymous Comments Box" at the bottom of each activities page. This box is a standard text submission box wherein students can type in their answers to the question or questions posed in the unit. These questions have been designed to stimulate student's thinking on the multicultural issues covered in the unit of instruction, and to extend their reflections on the material outside their accepted "comfort zone" as concerns multiculturally related issues in the educational environment.

Although this research only focused on the first question regarding students' thoughts concerning the overall concept of multicultural education, the questions posed for all units and the themes of the questions corresponding instructional units are listed below in table one.

The use of the anonymous comment technology is very simple from the student perspective. All the student must do is to type their answer or answers into the text box, and click on the submit button below. The text that the student has written in the box is then sent to the server on which the online courseware is resident. The submitted text is forwarded to the instructor in the form of an email which contains only the number of the unit anonymous comment box from which the comment has been sent, and the students comment. The email message received by the instructor contains a dummy from, and reply to address. There is no information forwarded to the instructor that could identify the sender's identity in any way.

The PHP script code that is used to submit the information from the web page form, and later send the text to email address of the instructor is included below, (see table 1) .

```
<?
//prepare email variables
$mailTo="jizat@mail.wtamu.edu";
$mailSubject=$unit." ".$type;
$mailBody  = "Comment: " .$comment."\n";
$mailHeaders= "From: student@mail.wtamu.edu";
// send the email
mail($mailTo, $mailSubject, $mailBody, $mailHeaders);
?>
<HTML><HEAD><TITLE>Response</TITLE></HEAD>
<BODY BGCOLOR="#FFFFFF">
<h2><CENTER>Thank you, your information has been sent.</h2>
<BR><a href="#" OnClick="history.go(-1)">Click
here</a> to go back.
<BR><BR></CENTER>
</BODY>
</HTML>
```

Table One: The PHP Script Used to Create the Anonymous Comment Box

During the first and all subsequent semesters in which the Multiculturalism in Education course was offered online to graduate students a general introductory meeting was held with the professor. The purpose of this meeting was to describe the mission and contents of the course. Along with the standard online course delivery technologies required for use by students (email, posting to the discussion forum, attaching documents to email, connecting to university dial up Internet access, accessing web pages etc.) Students were familiarized with the anonymous comment technology they would be using during the semester.

Due to the simplicity of use, the description of how to use the technology was brief, but time was taken to both explain to students the rationale for using the technology, and giving them assurances as to the true anonymity they could expect when submitting their answers in this manner.

Students routinely ask early each semester if copies of their anonymous comments can be sent back to them for inclusion in the portfolio of their work. These requests cannot, however, be honored as there is no way, once a comment has been submitted through the anonymous comment box, to ever identify from whom the comment was submitted.

Analysis of Data

The researchers in this study were particularly interested in the first anonymous response prompt concerning the overall idea of multicultural education and its impact of the treatment of various groups in

the classroom. The text of the first prompt was: "*I am very interested in what you as an individual feel about one thing: the overall idea of multicultural education, and the changes it has made in the treatment of the many distinct cultures, races, socio-economic groups, learning abilities, sexual orientations, etc., in the classroom.*"

The researchers examined this question using a constant comparison method for data analysis which consists of simultaneous coding and analysis of data (Taylor & Bogdan, 1984). The data from the first question was analyzed initially by three researchers who examined the anonymous responses independently to identify themes. The three researchers met and developed five consistent themes and definitions that emerged from the responses. Three researchers then examined the anonymous responses from the three semesters independently and coded the comments using these themes and definitions. The researchers finally met to discuss the accumulated data, emerging themes, and reliability of the coding.

Findings

There were a total of 105 students enrolled in the online course, Multiculturalism in Education, over the three semesters from Fall, 1999 to Summer, 2000. Of this total, 102 anonymous responses were given to the first question regarding the impact of multicultural education in the classroom. This represents a 97.1% response rate. As students were aware that, due to the anonymity ensured by the technology used, there was no way for the instructor to know whether or not any individual student had in fact answered each comment prompt the high response rate is remarkable.

Themes and Definitions

Five themes were identified from the anonymous responses by the research team. These themes were discussed in detail and definitions were developed for each theme to aid in the coding of the data. These themes and definitions were as follows:

Applied Positive Statements. The comments reflect positive statements regarding multicultural education and demonstrate some clear experience or application of multicultural education.

Positive Statements. The comments reflect positive statements regarding multicultural education with no contrasting/negative/rebutting statements. While the comments do not reflect experience or application, they may make reference to using the benefits of multicultural education in the future.

Somewhat Negative Statements. The comments reflect some positive content concerning multicultural education, but also includes clear contrasting/negative/rebutting statements about the effect of multicultural education.

Clearly Negative Statements. The comments reflect clearly negative, blaming, or derogatory statements concerning multicultural education with no positive comments.

Neither Negative Nor Positive Statements. The comments reflect content that does not fit the criteria listed in the other definitions.

Interrater Reliability

Three researchers performed the coding of the 102 anonymous responses. Raw data representing the three raters' coding for the 34 responses during the Fall, 1999 semester showed complete agreement on 24 of the 34 ratings representing a 70.6% accuracy. In the Spring, 2000 semester, the coding of the three raters showed complete agreement on 32 of the 42 total ratings representing a 76.1% accuracy. Finally, raw data representing the coding for 26 responses during the Summer, 2000 semester showed complete agreement on 19 of the ratings representing a 73.1% accuracy. Interrater reliability for the total 102 cases was computed at .9019.

Applied Positive Statements

Approximately 17.4% of the anonymous responses were rated as Applied Positive. Statements in this category not only reflected positive content regarding multicultural education, but also suggested that the respondent had made some application of his or her multicultural knowledge or understanding. For example, one respondent said, "Multicultural education is very important because as our classrooms become increasingly diverse, we must rethink our current way of teaching. I have experienced the way that this knowledge has made a difference in my own experience in the education field." Another respondent explained, "Multicultural education has made a positive change. I speak from personal experience. After attending a multicultural workshop, myself and the two other teachers that I attended with, all changed the way we taught, disciplined, and praised."

Positive Statements

Almost 39.1% of the comments reflected Positive Statements regarding multicultural education. These statements were positive with no contrasting/negative/rebutting statements, but did not reflect experience or application. Respondents in this category concentrated on thoughts that education should recognize the importance of multicultural education. For instance, one respondent said, "I think that it is very important to have at least a basic understanding of the diversity of cultures that are present in the classroom. Multiculturalism can impact everything from success in the classroom to discipline, to how the student reacts to different situations." Others made positive statements as to how much multicultural education has already affected the classroom. "I feel that multicultural education has made a tremendous difference in education and has been beneficial to all students," one student responded.

Negative Statements

Nearly 31% of the anonymous responses were somewhat negative. Responses coded "Somewhat Negative" indicate that respondents viewed an awareness of multicultural education as important but felt that too much emphasis is being placed on making curricular changes based on multicultural awareness. Three out of every 10 students who responded made positive statements about multicultural education but presented contrasting, negative, or rebutting statements. One respondent stated, "sometimes in our efforts to address multicultural issues it creates another problem." Others made statements that included concerns with being overwhelmed by change, "it is difficult to address all issues without hindering learning in another area. Some people take advantage of multicultural education. It has taken away from the classroom by the teacher having to focus on individual needs when that time could be used to teach the whole class." The respondents indicated that an awareness of multicultural differences often negatively impacted both class-wide learning and treatment of students from different cultural groups. Many respondents felt that multicultural education had (a) been taken too far, (b) had created an environment where teachers spent more time being politically correct than meeting the needs of the whole, (c) created conflict and fear, (d) been used as an excuse to obtain advantages by minorities.

Clearly Negative Statements

Approximately 11% of the anonymous responses were found to be clearly negative. One out of every 10 students who responded made negative, blaming, or derogatory statements about the effect of multicultural education in the classroom. Examples of such statements include, "Multiculturalism has gone beyond reason. We go above and beyond to make everyone equal. Let's face it, no one is equal. It has lowered the education standards, and "It seems like minorities get all the breaks and help with their education. How can this be fair to the middle class white people?, and finally, "Minority rights have superceded the rights of the majority. It seems that the majority must make sure that the minority is not offended. When we worry more about who may be offended rather than the good of the whole, we are missing the boat.

Conclusions

It has been observed by the researchers that the most significant difference between teaching a multiculturally based course in the traditional classroom and in the online World Wide Web environment is communication in the form of class discussions. Due to the sensitive nature of many of the multiculturalism in education related issues being discussed rarely are more than ten to twenty percent of students willing to make their thoughts and feelings know in an open, face-to-face environment.

This reticence may have two main negative effects upon the learning environment. Students who do not feel free to comment in an open forum course will not be as integrated into the learning experience as they might be. Also, the lack of input on the part of the students will have a negative effect upon the instructor's ability to structure teaching to meet the perceived needs of the particular students in each class taught.

The anonymous comment technology provides a facility for meeting both the needs of students to communicate their thoughts and feelings on difficult issues in a safe communication space, and to allow for these comments to be used by the instructor in tailoring the courses evolution to the needs of the class members as perceived by the instructor through these comments.

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Diversity through Co-Operation: Creating and Delivering Content in In-service Teacher Education

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Abstract. This paper describes some Norwegian experiences from *the Co-operation Network* project in teacher education. Through the network, students in the study programme "ICT for Teachers", are offered a diversity of web based optional subjects from several university colleges. Different forms of collaboration are applied in the network, and Tony Bates' three categories of inter-organisational co-operation are used to discuss the alternative forms. An organisational and economic model of co-operation is presented and discussed according to diversity.

Introduction

In accordance with the National Curriculum in "ICT for Teachers", one fifth of the study programme is offered as optional subjects. In Norway, the university colleges are rather small, and the classes for in-service teacher education in ICT typically have 15-30 students. Naturally, optional subjects are thus too expensive for a single college. Instead, six university colleges co-operate on offering a pool of optional subjects to their joint group of students.

Through a web-based network, each participating college provides one or several subjects. Each college is then able to offer their own students a real choice between subjects. Most students are ordinary on-campus students, and all courses are delivered through the web. Each institution is responsible for the content and the quality of the course they offer. When attending a course through the Co-operation Network the student is guaranteed the right quality and level, and that the subject fits into the study programme.

The Co-operation Network provides the basis for open and flexible learning. The project includes co-operation on the development of technology-based distributed learning among public and private university colleges. Both teacher education and computer science departments from several colleges participate as partners, developing electives. In addition, the network has established and formally agreed of a model on running management regarding both administrative and maintenance issues.

The Co-operation Network has been running for a year and a half; six colleges provide 7 courses to approximately 80 students. Systematic evaluation data were collected on the first year of the experiment. The data have been collected through interviews with all participating teachers, evaluation forms from the students, and systematic logging of student activity and final marks, as well as minutes from meetings in the project group, analyses of ideas, solutions and practical experiences from the co-operation (Rekkedal & Johannesen 2000).

The Co-operation Network can be said to be the realisation of the vision of "Technology-based Distributed Learning", as described in (Bates 1995); ICT-based flexible learning both for on-campus and off-campus students. This form of learning – and teaching – is more and more organised independent of time and space. In order to realise flexibility in time and space, information technology is used for communication. The co-operating colleges enrol both ordinary on-campus students, following the fixed progression of a study, and off-campus students starting and ending their studies according to their individual schedule. More students are also in-service students, following the courses beside their paid work and family duties, and are somewhere between on- and off-campus students. Open and flexible studies are thus practical, wanted and necessary.

In the further presentation, we will emphasise how the Co-operation Network leads to diversity in content and thus better quality for the students.

On Co-operation

Universities try to maintain their own autonomy. Why should they co-operate? In the present economic situation, the universities are not able on their own to fulfil the needs and wishes of their students. The possibilities to gain better quality and fulfil the students' needs are especially mentioned by (Neil 1981) as important motives for co-operation.

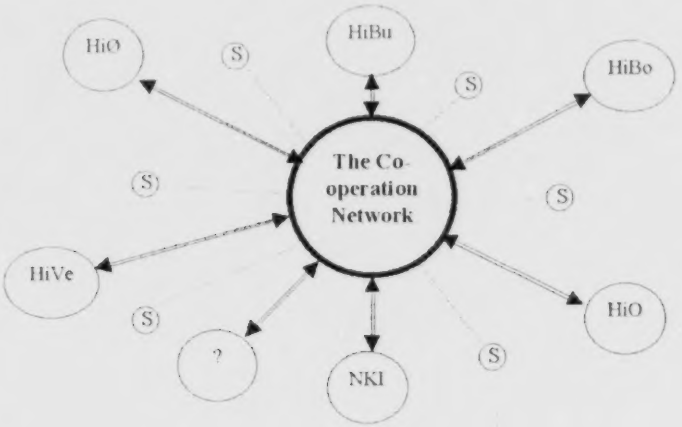

Figure 1 The Co-operation Network

The Co-operation Network is an active working partnership both on academic and administrative issues. One private and five public university colleges are co-operating on development and delivery of credit courses, based on flexible solutions. In (Fig. 1), the large circles placed around the network centre, denote the university colleges. The arrows between the colleges and the network centre denote, from an academic point of view, that each college provides students and courses for the network, at the same time as their local students attend courses delivered by other partners in the network. From the administrative perspective, the arrows denote the information flow of students and courses. And from an economic point of view, the arrows can be said to denote the stream of money between the network partners. The small circles, marked with S, denote typical in-service students, attending separate courses through the same network. The acceptance of individual students in addition to the college on-campus students contributes to the flexibility of the offer, and also to a larger diversity of perspectives between the students on every course.

The Co-operation Network is built on practical co-operation between academics on the development of courses and negotiations and testing of agreements. Also, the colleges co-operate on the development and delivery of exams. All parties deliver and use the same kind of services through the Internet, however related to their different fields of interest. The commitment of every institution is established through formal acceptance of the co-operation model defined by the project group. This kind of co-operation, between private and public university colleges, has never been fulfilled in Norway before.

In his recent book, Tony Bates presents three forms of co-operation between colleges (Bates 2000). He denotes the forms as *franchise*, *transfer of course and credit* and *joint course production*. In the *franchise* model, the course is owned by an institution. The owner institution develops the course and the exam, and may also deliver the course in (parts of) the market. The course may be delivered by one ore more of the partners in co-operation. This is the traditional distance education model. The distance education company buys courses from authors, and then engages teachers. Maintenance and further development is the responsibility of the distance education institution. This model is used only to a small extent in the Co-operation Network. The project aims to test some more dynamic and flexible forms of co-operation.

Co-operation built on *transfer of course and credit*, puts mutual co-operation on development and delivery of courses as the crucial point. Each partner "owns" courses and may sell and buy them mutually. This model is the most frequently used in the Co-operation Network, and is stated as the default model in the network contract. The advantage of this model is that the owner institution holds the responsibility of maintenance and further development of the courses, and is committed to the entire lifecycle of the course. This commitment is also regulated in the economic agreement – the owner institution gets paid from every student attending the

course. If the owner institution for some reason is not able to deliver the course, then some other institution in the network may perform the delivery. Still the owner institution is responsible for maintenance, and the student fee is divided between the two.

The last one, *joint course production* may be seen as the most challenging. The partners will develop and own courses together, and find ways of organising the co-operation of delivery. This form of co-operation is however not central in the project, and such agreements are established as bilateral agreements. The Co-operation Network includes elements of all three forms of co-operation, even if the main idea falls in the category of *transfer of course and credit*. When the developers deliver a course, they will feel a strong commitment to the course – the course will be a part of the ordinary educational infrastructure, and not an add-on. Teachers will catch the needs for change while teaching.

Individually Costed Services

There is a need for a clear understanding of the connection between costs and benefits, regarding both development and delivery of teaching. The development and negotiation of an organisational and economic contract for the co-operation have been crucial in the project. The project has developed a value chain for the project.

Registration	Development	Delivery	Examination	Accreditation
Local registration 10% Central registration 10%	Development /maintenance 30%	Teaching & tutoring 30% Local tutoring 2%	Development /examination 14% Local examination 2%	Certificate 2%

Figure 2 Value chain for a student in the Co-operation Network (Johannesen & Ogrim 2000)

The basic idea is to divide the costs related to the education of each student into logical pieces. This is illustrated in the value chain shown in (Fig. 2). The model is inspired by Porter's well-known value chain (Porter 1985), and is the basis for the division of costs and benefits between the participants in the network. Standard costs are divided into teaching costs: development, delivery and exam (76%) and administrative costs: subscription, class administration, exam, and accreditation (24 %).

Inst.	Revenues for local administration	Revenues for course d & d	Revenues for central administration	Costs for purchased services	Result
NKI	15 stud.: 12 000	20 stud.: 74 000	61 stud.: 30 500	15 stud.: 75 000	41 500
HiBo	20 stud.: 16 000	18 stud.: 66 600		20 stud.: 100 000	-17 400
HiO	18 stud.: 14 400			18 stud.: 90 000	-75 600
HiVe		7 stud.: 25 900			25 900
HiBu	8 stud.: 6 400	5 stud.: 18 500		8 stud: 40 000	-15 100
HiO		11 stud.: 40 700			40 700

Figure 3 Economic settlement for 1999/2000

The co-operation model and distance education model easily allow us to scale costs and benefits in relation to the actual student mass. This is expressed in the first year economic settlement, summarised in (Fig. 3). The course costs for the optional topics of the 18 students at Oslo University College (HiO) were only a fraction of the costs of corresponding on-campus courses. The result is more students at each subject, and more offers for the students, that is a broader market.

Diversity

In this section, experiences from the Co-operation Network are presented. We will focus on how the co-operation model has led to diversity in topics offered and pedagogical solutions. To the students, the model

means flexibility, access to lifelong learning and more courses. To the institutional partners, the model means cost effective offers, the possibility to fulfil local needs and the needs of special groups of students. Also, they give the basis for customized study programmes (see also Brindley & Paul 1993).

Distance Education as a Means for Diversity

Distance education is a precondition for the whole project. Most students are enrolled as on-campus students in one of the participating university colleges. They make use of the local infrastructure and co-operate with their local fellow students, at the same time as they make use of the distance education facilities of the Co-operation Network. Even if the students generally express scepticism with respect to distance education they are satisfied when the result is more optional subjects. An evaluation of academic and pedagogical aspects of the project is documented in (Rekkedal & Johannesen 2000). Other similar studies may be found in (Rekkedal 1998, Rekkedal 1999, Keegan & Rekkedal 1999).

This form of teaching can also be said to describe modern technology based *on-campus* education: partly independent of time and space and with information technology as a means of communication – technology based distributed learning/e-learning. Using distance education technology as a part of a study programme at universities and colleges is also in line with official educational politics all over the Western World.

Not only do the students choose among different course *content*, but also among different forms of *communication* and different forms of *technical* and *pedagogical* solutions. In *content*, they choose among for instance programming, technical issues of local networks, data modelling, and gender issues in ICT. Regarding *communication*, all courses are web based, and apply asynchronous one-to-many and one-to-one communication (see Paulsen 1998, Fjuk 1998). Other forms of communication, including many-to-many synchronous and asynchronous communication are applied to various degrees. Some of the partners have chosen to purchase communication solutions. With respect to *technical* solutions, there are also differences. The network has agreed on not to standardize neither the technical solutions nor the web design. The reason for this is the idea of courses owned by their developers and that technical- and interface-design is included in the ownership.

Also with respect to *pedagogical* solutions there are differences. Two in principle different teaching models are used. The first one is a flexible model with an individual starting point and progression. The other one has a fixed starting point and group-based progression. There is a tendency that the students who normally study in free progression prefer that model, and those who are attending on-campus studies prefer the other. Group-based progression is often preferred because this model fits best with other courses in their total curriculum. Co-operation with and help from other students are also arguments in favour of group-based progression. The arguments in favour of free progression are mainly based on the need for individual freedom, adapting to working hours, and family duties.

Modern ideas of teaching and learning, including theme organisation, problem-based learning, seminars and project pedagogy are challenging for distance educators (see Fjuk 1998, Fjuk & Øgrim 1997a, Fjuk & Øgrim 1997b). So far, the Co-operation Network project has not dealt with these challenges collectively. Some of the partners, however, have experimented with co-operational pedagogical ideas. Here we will only indicate two examples. One course is based on seminar pedagogy, combined with problem based learning. In this course the communication technology, especially for synchronous communication, is crucial. Another course gives practical training in running a local network – taught via Internet and one week of practical laboratory work.

Quality through Diversity

The potential customers for the Co-operation Network are teachers with a basic knowledge of ICT. This market is relatively small in Norway. By co-ordinating the offer of optional subjects, each course may achieve a critical mass of students and it is profitable to invest the necessary development resources (Moran & Mugridge 1993a). Without co-operation each college will in practice make the choice itself, and the result may be one single offer to the students. (Moran & Mugridge 1993b) describe related problems in their survey of international studies on co-operation in distance education.

Co-operation makes it possible to specialise because each college does not have to develop and deliver all subjects in the National Curriculum. This specialisation makes it possible for each college in the network to concentrate their professional resources on the optional subject they offer, and thus strengthen the academic competence in this field. In the economic model the Co-operation Network differentiates between development and delivery of courses with the following consequences: 1) Both the developing institution and the delivering institution benefit from students attending the course owing to the fact that student fees are divided between these services. 2) The developing institution has the continuous responsibility for course maintenance,

expressed by the parts of the student fee that are always related to the development- and maintenance-services. 3) Course delivery may easily be distributed within the network, because the model expresses delivery services as distinguished from the development. The economic model prepares easily for diversity even in co-operation arrangements between the partners.

Students' Evaluation: Do the Students Experience Diversity?

The students' evaluation was collected through a web based questionnaire. The students are mostly positive and express that net based studies can give satisfactory learning results. Most of them can see themselves attending net based studies again, and will recommend such studies to others (Rekkedal & Johannesen 2000). The most important property of the Co-operation Network from the students' point of view is the possibility of choosing among several courses. An other advantage is the possibility to study at a distance and the flexibility of this form of teaching, including gaining experience with information technology. Except from these qualities, their experiences differ. This is expected due to the network idea of diversity.

The students' general experiences, both on the Co-operation Network's web site (Samarbeidsnettverket 2000) and administrative issues, are mostly positive. Negative comments seem trifling. Some of the courses are still characterised by lack of interaction. The poor contact between the teacher and fellow students is mentioned as a disadvantage in distance education. These are obviously conditions that should be improved in the future. The lack of communication is also among the students' proposals for improvement. Both the form (quality) and the amount (quantity) need to be enhanced. The teaching material can be made richer through the use of for instance sound and video. Some more participants in the network would also be desirable in order to offer more optional subjects.

Conclusion

The project has through negotiations around practical solutions, the work with the value chain and practical experience managed to establish agreements on economic and administrative relations. The agreements have so far been tested and evaluated for one year of study. They have been renewed, and extended to larger parts of the study programme. The principles from the Co-operation Network, as expressed in the formal agreements, are accepted as the organisational basis of two new projects at Oslo University College; The development of a Master Programme in ICT and learning, and the development of an open and flexible specialisation programme in the combined pre-service and in-service teacher education.

A close relation between the development, delivery and maintenance of the learning environment and course material, also on the Internet, is of importance. Commitment and organisational anchoring is the result From an economic point of view, development is thus not seen as a one time cost before course delivery, but as a running cost of continuous development and maintenance closely related to the delivery of the course. The student fees will in the first placed hopefully cover the investments of first time course development, and then continuously cover the costs of maintenance.

Many colleges and universities wish to deliver open and flexible courses, most of them by themselves. In this project we have experienced that co-operation on the development and delivery of courses is beneficial to all partners. The partners have gained economic advantages along with better and more offers to their students. The result is diversity through co-operation, diversity in course content, combined with structure of the study programme, diversity in communication methods, in technical solutions and in pedagogical approaches.

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"WorldGate:" An Attempt to Close the Digital Divide

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Abstract: WorldGate offers the consumer a low-cost, simple-to-use means of connecting to the Internet, and sending and receiving email, without a PC or telephone line. All that WorldGate requires is a TV set, wireless keyboard, and a set-top box connected to a cable TV system.
This fall, fourth grade students from elementary schools in Connecticut, Illinois, Louisiana and Ohio will be among the first to participate in the WorldGate Internet School To Home (WISH TV) Program. WISH TV is a public service initiative provided by WorldGate, local cable operators and participating set-top manufacturers. The program provides participating elementary school children a full school year of free in-home Internet access.
The WISH TV Program ensures that children from all economic levels will have the opportunity to ride the technology tidal wave and not be left behind.
Through WISH TV, students and teachers will be able to integrate the Internet into the curriculum. The program expands existing school curriculum by linking students and parents directly to teachers. Students' Internet access to questionable Web sites will be restricted through current filtering technology. Home Internet access will enable them to do research on their homework, and gain access to school calendars, schedules and class information and extra curricular activities.

Introduction

Invariably, on a day-to-day basis, we hear of the importance or role that the Internet plays and how it has the potential to improve the quality of our lives in the workplace, in our personal setting, and finally, in a global capacity. Much of what the Internet had promised has already been accomplished and is taken for granted in disseminating information to the masses who can afford, have the capability and the knowledge to utilize this technology. However, there are a group of individuals who would be categorized as the "have-nots." It is these citizens who must be encouraged to advance and be given the opportunity to do this. One segment of the population deserving of help are the children who have been ignored. In order to close the gap, which is frequently referred to as the digital divide, "WorldGate" is pioneering a project in Fall, 2000. Its objective is to provide students on all economic levels the ability to gain access to the Internet - from school and from home - via cable TV.

The Study

Through WISHTV, "WorldGate" Internet School-To-Home will be working with local cable operators and school systems to provide a full school year of free - in-home and in-school - Internet access by providing a set-top converter to be placed on a standard television set to all of the students in a single grade. The program provides participating elementary school children a full school year of the free in-home Internet access. Home Internet access will enable them to do research on their homework, and gain access to school calendars, schedules and classroom information, and extra curricular activities. The program expands existing school curriculum by linking students and parents directly to teachers. Students' Internet access to questionable Websites will be restricted through

current filtering technology. For Fall, 2000, it is the fourth grade in certain elementary schools in Connecticut, Illinois, Louisiana, Missouri and Ohio. In this pilot project, students who participate will be evaluated by using standardized exams and compared to the control group who are not able to take advantage of the experiment. "WorldGate" has promised to assist school administrators in utilizing national standardized tests and other reputable measures to determine the effectiveness of the program. The plan is that in the program's second year, the number of schools participating would be increased to over one hundred. Although this may seem ambitious, it does have its rewards for both the user and the industry as a whole. As already mentioned, students taking advantage of the system would improve their scores on standardized exams and the manufacturer of the hardware, who receives positive strokes from the campaign, will ultimately have an increase in sales of their product.

Through the combined efforts of Motorola Broadband and Communications and Scientific Atlanta, Inc., have pledged to provide free equipment. This includes the donation of keyboards and set-top boxes in specific markets, which include the eleven schools in the five states already mentioned. The cable operators participating in this launch include Charter Communications, Buckeye CableSystem and Massillon Cable TV. Each of them has promised to provide free connections to those students in the program.

Proposed Findings

The goals of this ambitious project include the following:

1) Provide students with a capability and their own email accounts. This technological service will permit students to collaborate on projects, receive homework assignments, chat with penpals, here and abroad, open lines of communication between parents and teachers, and allow for students to communicate with their teachers and fellow classmates.

2) An enhancement of the school curriculum will enable students to access the Internet in order to complete school assignments. Assignments may be sent home directly, even though they be absent from class, so that they may keep up with their schoolwork.

3) Students would be able to gain the opportunity to become involved interactively and explore new ways of learning directly from home. WISHTV actually extends the school day. It gives homework a whole new meaning.

Conclusion

Unfortunately, due to circumstances beyond the control of the participants, cable companies, WorldGate and the schools involved in the project hit a major obstacle, which meant postponing the launch until the week after Thanksgiving. This would mean it would begin at or about November 27, 2000. According to Theresa Durso, Senior Marketing Representative for WorldGate, the required testing of the system took more time than was expected. To say that WorldGate was apologetic for the delay would be an understatement. There is little consolation to those who were so actively involved in the project up to this point. However, what might be garnered from this is the knowledge that the industry and teaching professionals are dedicated to improving the learning curve on a grand scale. What can be salvaged from the remaining academic year is anyone's guess. Perhaps what can be accomplished is the laying of groundwork, which can be continued next school year. The funds, which were dedicated to this, have not been spent and should be reserved for the future. Ms. Durso feels that the schools that were involved could seek additional funding from some philanthropic source. As educators, we can hope that the WISHTV project is able to make the dreams of those involved a reality.

The proposed presentation, to be given March 5-10, 2001, in Orlando, Florida, will monitor the progress of the project up to the time of the conference and include those results.

Technology and Social Change:
Perceptions of Culturally Diverse University Students

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Abstract: This paper is a report on the findings of a pilot study addressing the perceptions of culturally diverse university students and computer technology. A survey instrument was generated to assess differences in attitudes, background and usage of computer technology. Specifically, the study addressed three questions: How do female students and members of different ethnic groups view the importance of computer technology for themselves and for their families? What role do cultural traditions have in creating interest in using computer technology? How do female students and members of ethnic minority groups use computer technology? Results indicate the affects of gender bias in computer technology, and some differences between ethnic minority groups and European American students. Questions for further research on this topic are discussed.

Introduction

Technology has been viewed by society as a powerful tool for social change. As a result of the belief in the power of technology, computers are increasingly being used in educational settings. However, despite all the attention that computer technology is receiving, researchers and educational leaders are realizing that computer technology has done very little to change the lives of people who are female, an ethnic minority, or people who are poor. Thus, there is a growing gap between those who have access to computer technology and those who do not. Students who are female, ethnic minorities or members of low-income groups tend to have less access to computer technology. Members of these groups who do have access to computer technology tend to use it for less cognitively demanding tasks. Societal issues such as poverty, gender and ethnic discrimination have also played a part in determining who has access to computer technology. The gap between those who are able to participate in the technology revolution and those who are not is often referred to as the *digital divide* (Bracey, 2000).

A parallel concern to the question of computer technology access is the issue of who is setting the agenda for the use of computer technology in schools and whose voices are being heard in the discussions. Similar to the academic curriculum, in most institutions in the United States educational technology is controlled by the dominant, European American middle class perspective. This lack of engagement can result in disillusionment and disassociation with technology. If this trend continues, ethnic minorities, women or people who are poor may never be able to reap the benefits of computer technology since members of these groups may feel that computer technology may not be addressing their needs.

The purpose of this pilot study is to explore the issues surrounding computer technology and social change from the perspective of diverse learners in a university setting. In this paper, diverse learners refer to students who are either female, identify themselves a member of an ethnic minority group, or someone who grew up in an economically poor neighborhood. This paper will specifically explore the following questions:

a. How do female students and members of different ethnic groups view the importance of computer technology for themselves and for their families?
b. What role do cultural traditions have in creating interest in using computer technology?
c. How do female students, members of ethnic minority groups and students from low socioeconomic backgrounds use computer technology?

Findings from this pilot study will guide the development of a larger study in the future.

Background

The digital divide is a matter of great importance to educators and policy makers. While computers are being used more frequently in the lives of most people, there is a growing concern that some members of society are not able to participate in the technology revolution. One concern is the lack of access to computer equipment, especially access to computers in the home (McAdoo, 2000). Another concern in discussions on the digital divide also centers on how the equipment is used in communities that have computers. Students in wealthy areas tend to use computers for higher order thinking skills while students in low socioeconomic neighborhoods tend to use computers for drill and practice. There is also a difference in the computer usage of male and female students. Further, the digital divide exists between people who are ethnic minorities and those who are not.

Female students are less likely to see the importance of computers in their lives than male students. Gender inequity in education is nothing new. Sadker and Sadker (1995) showed how schools perpetuate the underachievement of female students, especially in Mathematics and Science. Gollnick and Chinn (1997) explain that the underachievement of females in school is a product of a system that perpetuates the belief that female students are not as academically capable as male students. Teachers expect less of their female students. It is therefore not surprising that female students are less interested in computer technology. Kelly (2000) states, "one of the first indicators of this gender disparity may be the Advanced Placement exam in computer science. Girls accounted for only 17 percent of the test takers on the A exam and 9 percent on the more difficult AB exam" (p. 155). Huber and Schofield (1998) studied the attitudes of male and female elementary school students in Costa Rica. Their study revealed that female students have a less positive attitude towards computers than the male students due to a number of factors: male biased software, the stress on competition in most computer classes, the stereotypical view of computer use as a male activity (even by female computer teachers), less teacher assistance for female students, and less computer use by female students outside of the classroom. As a result of these school experiences, women are less likely to seek a career in the computer industry and are not able to enjoy the same economic prosperity as their male counterparts.

Economics also plays a role in how computers are used in teaching and learning. Access to computers is a major factor that prohibits all students from learning through computers. The high cost of computers continues to prevent many schools from making computers available to students. Schools in affluent neighborhoods are also more likely to have a full-time technology coordinator, and teachers in less affluent districts have less access to technological professional development (McAdoo, 2000). Furthermore, students in poorer communities use computers for drill-and-practice types of activities while students in affluent communities use computers for inquiry-based lessons and collaborative learning (Kleiman, 2000). Thus, in poor communities, the computer leads the student. In more privledged communities the students control the computer for their own purposes. In order to bridge the digital divide, researchers and educators need to come up with ways to make computer usage meaningful for people who are poor.

There is belief that the digital divide will fade due to "market pressures, with decreasing hardware and connectivity costs inevitably leveling the digital playing field" (Carvin, 2000, p. 3). However, some researchers have been able to show that members of ethnic minority communities may not see computer technology as important to their lives even if they have the money to purchase computers. Holmes (1997) notes that many African Americans do not see the Internet as a relevant part of their lives. Hoffman and Novak (1999) show that the absence of relevant multicultural content on the Internet makes surfing the World Wide Web less interesting to ethnic minority communities.

Methodology

As university teachers, we are anecdotally aware that the concerns mentioned in the previous section are true for many of our students, at least in a general way. Because we were not completely sure of what specific research questions to ask, however, we conceived of this study as a pilot study whose purpose would be to help us understand how we need to formulate further research in this area. Our hope was that the tentative results of this study would lead to refining our research questions and methods for a future study.

This study was conducted during the Spring 2000 semester with students attending courses in our university. After an initial review of the literature, we formulated a survey instrument and pre-tested it on three students similar to our target population. One hundred sixty eight students participated in the survey, including 122 female (66.7%) and 50 male (29.8%). Since we wanted to understand the experience of diverse students, we selected university courses in which these students were more likely to enroll and asked professors in these courses to administer the survey and return it to us. Approximately 30 course sections were identified, in the areas of African American Studies, Chicano/a Studies, Asian American Studies, American Cultures and multicultural education courses. We received completed surveys from 12 course sections, a 40% return rate.

The student population included 53 graduate students (31.5%), 34 seniors (20.2%), 40 juniors (23.8%), 24 sophomores (14.3%) and 15 first year students (8.9%). The majority of students self identified as European American (n=68, 40.5%), and the rest self identified as Asian/Asian American (n=38, 22.6%), Latino/Hispanic/Chicano (n=24, 14.3%), African American/Black (n=12, 7.1%) and Pacific Islander/Hawaiian (n=8, 4.8%). We used the Survey Pro software package to create the survey, enter and verify data, and analyze the data using descriptive statistics and cross tabulations.

Findings and Discussion

The findings indicated that the vast majority of students (n=156, 92.9%) owned computers. However, 100% (n=15) of first year students reported owning a computer compared to 85.3% (n=29) of seniors. This could suggest that computer ownership is increasing among newer students. In other survey results there were more commonalties than differences among ethnic groups, with a few exceptions, and differences between gender groups.

In terms of ethnic groups, 41.7% (n=10) of Latinos and 58.3% (n=7) of African American respondents strongly agreed that using computers has improved their lives, compared with 38.2% (n=26) of European American, 34% (n=13) of Asian American and 12.5% (n=1) Pacific Islander/Hawaiian. Students of color respondents were more apt to describe their interest in computer technology as high or very high than European American students. While 48.5% (n=33) of European American students so described their computer interest, 66.7% (n=16) of Latinos, 65.8% (n=25) of Asian Americans, 58.4% (n=7) of African Americans, and 50% (n=4) of Pacific Islander/Hawaiians described their interest as high or very high. The results were reversed, however, when students were asked if their home and/or cultural traditions encouraged them to use computers on a regular basis. Twenty-five percent (n=17) of European Americans strongly agreed with this statement compared to 23.7% (n=9) Asian Americans, 16.7% (n=2) African Americans, 8.3% (n=2) Latinos and no Pacific Islander/Hawaiians.

It was somewhat surprising to us that ethnic minority students indicated higher interest than European American students concerning computers and whether using computers had improved their lives. We were not surprised that ethnic minority students reported less encouragement from their home and/or cultural traditions to use computers on a regular basis. Taken together, these data can be understood by the fact that the majority of students of color at Loyola Marymount University are first generation college

students. This could suggest they might have less experience of computer technology at home and are more interested in it as college students.

In terms of gender, the results of this study support literature that suggest women are less inclined toward technology than men. Close to half of the male students (44.0%, n=22) strongly agreed that using computers has improved their lives compared to 34.8% (n=39) of female student respondents. Male respondents were more than twice as likely than female respondents to describe their interest in computer technology as very high, 38% (n=19) compared to 15.2% (n=17). Likewise, male students were more than twice as likely as female students to strongly agree that their home and/or cultural traditions encourage them to use computers on a regular basis, 32% (n=16) compared to 14.3% (n=16).

The above findings support research (Huber & Schofield, 1998) that indicates differences in attitudes concerning computers between female and male students. It is not completely clear as to why these gender difference in technology are present, although the research of Sadker and Sadker (1995) would suggest that this phenomenon is an extension of the gender bias that already exists in schools.

Conclusion

As previously mentioned, this study was conceived as a pilot study. In reviewing the data, we conclude that our sample of university students is not representative of ethnic minority communities in general. Because we want to understand how these communities relate to technology, we need a broader sample that controls for level of education. Further, our data did not allow us to answer our question about socioeconomic status, because there was not enough socioeconomic variance in our sample.

In thinking about new questions that we want to ask in a future study, we are interested in finding out how respondents became interested in computer technology and at what point in their lives did they have access to it. We are also interested in examining the question of gender differences in more detail to understand the source of these differences.

A larger sample size will allow us to analyze variance in socioeconomic status concerning computer technology. We are interested in examining how poor people get access to computers and how they use them. Our overall goal is to understand how the digital divide can be bridged for the various groups that are left out of the technology agenda.

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IDENTIFYING SCHOOL CONDITIONS AND TEACHER PRACTICES THAT HAVE PROVEN EFFECTIVE IN INCREASING MATHEMATICS AND READING ACHIEVEMENT FOR AFRICAN AMERICAN STUDENTS AND STUDENTS IN SCHOOLS WITH SUBSTANTIAL MINORITY STUDENT POPULATIONS.

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Abstract: Reading, Writing and Arithmetic finding ways to make them stick! The focus of this research was to identify those conditions and teacher practices that have been proven effective in increasing the academic performance of African-American students and students in schools with substantial minority populations. The targeted population for this research was reading and math teachers from schools whose Texas Assessment of Academic Skills (TAAS) performance was reportedly Exemplary, Recognized or Acceptable. Research participants must have been teaching in classrooms with at least a 50% minority population. They also must have had at least 70% of their students passing the TAAS exam. Research results indicated that over 90% of the respondents Always exhibited the following strategies in their classrooms in Reading and Mathematics: Believing in their own self efficacy; Projecting a vision of excellence; Believing students can reach their potential; Encouraging students to ask questions; and Teaching students critical thinking strategies for solving math problems.

Introduction

Our nation is becoming ethnically and racially diverse. Several studies indicate that by the year 2005 about 30% of the U.S. population will be racial-ethnic minorities. Moreover, this percentage is projected to increase to 50% by the year 2050 (Reed, 1998). By the turn of the century only 15% of the new entrants into the workforce were native-born white males, compared to 47% in 1987 (Johnston, 1987). Even though the workforce will be more dependent than ever before on women and people of color, a disproportionate number of these individuals are not gaining the skills and knowledge needed to successfully function in the labor force (Johnston, 1987). Currently about 30% of school-age children are minorities, and this number will increase to about 36% by the year 2005. It is predicted that Hispanic American school children will increase from 12.5% to 22.6%, African Americans from 14.7% to 17.7% and Asian Americans from 3% to 9%(Larger, 1995). Florida, Mississippi, New Mexico, California, and Texas already have more than 30% children of color (Allen, Hutchinson, and Johnson, 1995). According to various national and state assessments, minority students, specifically African American students, are in the last or lowest tier of academic achievement (Journal of Negro Education, 1993). Whereas there is no reported emotional, psychological or intellectual reason that fully explains the low academic performance of many minority students, this phenomenon has baffled educators. Signham (1998) states in the article The canary in the mine: the achievement gap between Black and White students, "The educational achievement gap is real and has serious social, economic, and political consequences; however, the situation is by no means hopeless, if we start looking at the problem in new ways and avoid simplistic one-shot solutions." Many minority students are poor, neglected, abused, under housed and/or undernourished. Further exploration

of this issue often finds schools that have large minority student populations characterized by discipline problems, heightened security, high absenteeism, dropouts, and few intellectually challenging courses. Also, pervasive in this environment is the attitude that the school's problems are a direct result of the students, their families, and their neighborhoods. Educators must realize that the children themselves, their parents, and the communities from which they come are not solely to blame. The blame for the low achievement of any group of students in an academic institution does not rest solely upon any one entity. It is, however, the responsibility of all (i.e. teachers administrators, community members, parents). Bloomington (1993) suggests that schools, in order to be successful in our rapidly changing society, must cross barriers of language, values and culture. To enhance the academic performance of minority students, we must investigate the conditions and instructional practices that are occurring in our schools and classrooms. We must also analyze the climate of the school as well as the attitudes of teachers. No longer can we point the finger of blame! We must accept responsibility and work to meet the needs of our increasingly diverse student population.

Research Focus

The main focus of this research was to identify those conditions and teacher practices that have been proven effective toward increasing the academic performance of African-American students and students in schools with substantial minority population. Clearly, students from poor and/or challenging family situations can perform as successfully as children from high-income families. According to Singham (1998), there is little evidence for the belief that minority, more specifically African American, students are somehow genetically inferior to whites and that the barriers impeding their academic achievement are insurmountable. Minority students, again and again, have consistently beaten the odds and demonstrated successful performance in schools across the nation. This research sought to identify the techniques and strategies that have proven effective in increasing the math and reading achievement of African American students and students in schools with substantial minority student populations.

Research Questions

The purpose of this research study was to contribute to the knowledge base information that would help in the development of practices to facilitate the academic success of African-American and other minority populations in the areas of Reading and Mathematics. In order to gain a deeper understanding of this insure the following questions were addressed: 1)What characteristics (clear vision,, teacher attitude, strong leadership, knowledge of curriculum, etc.) do teacher view as important to student success? 2) What strategies do teacher who work successfully with minority students (as measured by the Texas Assessment of Academic Skills (TAAS) test scores) in the areas of Reading and Math employ in their classrooms? 3) Are there differences in the strategies teachers believe are successful in working with minority and at-risk students and in those that teachers actually use? 4)Are their certain building practices or conditions that contribute to the success of African-American or minority students? If so what are they? To what extent do successful teachers use these strategies? 5) Which strategies are most successful in helping African-American and minority students improve their performance in Reading and Mathematics on the TAAS test? 6) What can be done to help teachers and schools better meet needs of the minority and low income at risk population? 7) Are teachers using culturally specific pedagogy? If so, what pedagogical strategies are best used and where have teachers received the training for these instructional practices?

Review of the Literature

A review of literature has highlighted numerous factors, which have influenced the success of minority students in schools. Daisy Reed believes that because there is a shortage of minority teachers, whereas Anglos make up 86% of the teaching population, there is a need to educate teachers on teaching minorities (Reed, 1998). Many times teachers, of all races, have extremely different backgrounds, from the student population, and therefore need assistance in understanding the pupils' lifestyles. Some identified aspects that would be helpful in educating minority children were: Have knowledge of the student's background; Have first hand experience

working with minority youth; Understand the child's community; Promote desirable learning; Have classroom organization for effective discipline and control; Allow children to see and develop a relationship of similarities with the teacher (Reed, 1998). Educating teachers to teach minorities may not change the student's living conditions, but it can provide a better learning environment (Stephen, 1993). Claudia Steele, of Standford University, says that the low performance of African-Americans on standardized tests, as compared to the Anglo population, is due to a stereotypical "threat". This threat subconsciously demeans their test scores because of the historical fear that is instilled that African-Americans are inferior to Anglos, and especially exhibits this inferiority when their scores will be compared for achievement. The explanation for the low scores could be contributed to the fact that African Americans feel that they will not be the successor of the two groups (Steele, 1995). Researcher John Ogbu says that if the African-American community does not begin to see a reward for their effort given, then visible improvement on their academic performance will be minimized (1991). He suggests that the African-American community does not see a relationship between giving effort and receiving a reward, due to former denials and rebuke of employment and educational opportunities. History has shown that no matter the effort exhibited the rewards did not prevail among the community (Ogbu, 1991). Therefore, self-encouragement for academic achievement, for the youth of today, is minimal. Studies of the achievement related beliefs of African-Americans have focused on the premise that African-American children often do poorly because of their low expectations, lack of interest or giving up in the face of potential failure (Cose, 1998). Children's beliefs about their achievement outcomes are determinants of their behavior and performance in school. Students who perform poorly often feel they do not possess the ability to do well in school and as a result often do not attribute their success to their own efforts. According to research results reported by Dweck (1975), gains in the achievement of African-American students were attributed to intervention procedures that were designed to raise the self-confidence of these students.

Writer Barbara Lerner says the key factors to gaining minority success in school are increased self-esteem of the student and having minimum standards set that enables the student to obtain a high school diploma. In addition, she mentions that the educator must make the student knowledgeable of the student's failure. She says that the acknowledgement of failure is very beneficial to the child's drive to success (Lerner, 1995).

In order to meet the minimum competencies for high school graduation, the candidate must pass the state's objectives in Reading and Math. Teachers advise that the success of minority students can be granted, if the educator learns the culture of the students. She mentions how integrating literature, will inspire enjoyment for the class to discuss different books and stories (Diller, 1999). She mentions that selected literature must not only reflect the role of the educator, but the world of the student. Other key factors mentioned that can assist with educating minority youth are: To have dialogue with the students; To have dialogue with the children; To listen to the children; To have dialogue with the parents; To continue the dialogue (Diller, 1999).

Patty Shafer says that low scores in Math could be in part due to out of date curriculum and curriculum not being aligned with the state's objectives. Therefore, she said in order to gain improvement, schools must: Teach the objectives to be mastered; Use manipulative; Teach problem solving skills; Spend more than 1.5 hours on teaching Math. Over the years several characteristics of "effective schools" have been identified. "Effective schools" are those schools that have been successful in producing high academic performance among minority and/or low-income students. The identified characteristics include: A productive school climate and culture; Focus on student acquisition of central learning skills; Appropriate monitoring of student progress; Practice-oriented staff development; Outstanding leadership; Effective instructional arrangements of low achievers; Active and engaged learning; Salient parental involvement; High operationalized expectations and requirements for students; Multicultural sensitivity (Levine & Lezotte, 1990).

The Center for the Development and Study of Effective Pedagogy for African-American learners (CPAL) took the Holmes Group characteristics of effective schools and ran a Delphi technique with the principals of ten schools, ranking the Holmes Group characteristics of effective schools as related to Holmes fifteen characteristics of effective schools. Their goal was to determine the most important characteristics as: Clear vision; Knowledge of curriculum; High mutually determined; Demonstrative professionalism; Performance expectations; Teacher attitude; Parent and community involvement ; Administrator attitude Change implementation; School climate and morale; Innovative programs and Technology strategies; Staff development and training. These items were prioritized by effective schools and identified as extremely important and extremely relevant items (CPAL, 1996).

Methodology

Population

The targeted population for this research was teachers from schools whose TAAS performance was reportedly Exemplary, Recognized or Acceptable. These teachers must have been teaching in classrooms with at least a 50% minority population. They also must have had at least 70% of their students passing the TAAS test. These teachers worked in a variety of school districts in the state of Texas.

Procedures

The initial phase of this project was devoted to a review of the literature to determine what strategies and practices have contributed to the increased academic performance of minority students in the areas of math and reading. The Holmes Partnership, research from Haberman, Lewis, Edmonds, Levine and the Charles A. Dana Center provided valuable insight and helped to identify some common characteristics important to student success. These characteristics (e.g. clear vision, teacher's credentials, strong leadership, school climate, etc.) were used to construct the survey instrument. The survey instrument was drafted after much thought over wording and the type of question best suited for this instrument. The respondents were asked to indicate the extent to which factors influenced student success in the areas of reading and math by making choices in categories of Always, Some of the time and Never. Respondents were also asked to provide information about their age, ethnicity, educational background, years of experience, and to indicate the percentage of minority students in their classrooms. The initial instrument was tested for validity. Students enrolled in ADMN 5073 School Curriculum Leadership were administered the survey instrument as asked to make recommendations as to its readability and clarity. From the recommendations several revision were made resulting in an instrument that adequately addressed demographic information, teacher expectations, classroom strategies and practices. TAAS performance was the primary determinant in identifying schools for this research. We requested a listing (i.e. name, location, enrollment, etc.) from the Texas Education Agency's Customer Assistance and Training Department of all school districts within in the State that have a 50% minority population and have made significant gains, 70% or above pass rate, on the TAAS. This request yielded 14 districts that fit the criteria of our study. Additional, we requested Academic Excellence Indicator System (AEIS) reports for the 14 districts previously identified. The AEIS reports allowed us to identify specific schools within the 14 districts to solicit research participants. The survey instrument was administered to teachers from a variety of school districts and schools. Over 150 useable instruments were returned.

Results

Respondents

The majority of the respondents were female (79.9%) between the ages of 26-55, most falling within the 36-45 year old range. 64.9% of these teachers were African American, 24.3% were White and the remainder were Hispanic or Asian. The respondents represented 33 schools in the state of Texas. The majority of these teachers had 1-5 years experience as teachers with 57.3% coming from elementary schools and 40.6% coming from Middle or High Schools. In order to determine the practices and strategies that contribute to the increased probability of academic success for African American and other identified minority students, a survey instrument was distributed to teachers asking them to respond to the research questions.

Question: **To what extent are certain characteristics important to student success?** Teachers were asked to evaluate the extent to which fifteen factors were important to student success by rating them as **Always , Sometimes or Never** important. Over 90% of the respondents felt that the following characteristics or strategies were **Always** important to student success: Teacher Attitude (97.9%); School Climate and Morale (93.6%); Clear Vision (90.8%); Strong Leadership (90.1%). ***Question:*** **To what extent do you exhibit the following characteristics or strategies in your classroom in reading?** Over 90% of the respondents stated that they **Always** exhibited the following strategies in their classrooms in Reading subjects: Believing students can reach their potential (94.3%); Encouraging students to ask questions (93.9%); Encouraging students to take initiative (93.3%); Projecting a vision of excellence (90.4%); Believing in your own efficacy (90.3%). ***Question:*** **To what extent do you exhibit the following characteristics or strategies in your classroom in mathematics?** Over 90% of the respondents stated that they **Always** exhibited the following strategies in their classrooms in Mathematics: Encouraging students to ask questions (96%); Believing in your own efficacy (94.7%); Projecting a vision of excellence (93.7%); Believing students can reach their potential (93.5%); Teaching students strategies

for solving math problems (93%); Teaching problem solving (92.6%). Respondents were also asked to list their responses to four (4) open-ended questions. The following are consistent responses to all questions form teachers who taught Reading, Math, both Reading and Math and other related subjects. These responses were not tailed to fit the researcher's purpose and are in the words of the respondents. ***Reading Question:*** **Do you find certain strategies more successful than other when working with minority students?** Some of the responses included: Strategies that promote independent thinking; One on one teaching; Small groups; Classroom relaxation w/music and snacks; Speaking to Hispanic students w/Spanish phrases raises the level of trust; Relating trends/styles to lesson; Knowing the different "in" topics; Being able to relate to students; Real life material; Hands on manipulatives; Role playing; Scenarios; ESL strategies; Multisensory instruction; Reading aloud at home; More parental assistance/involvement. **Please list any specific Reading/Math programs you have found to be successful in working with minority students. Some of the responses included:** SRA Reading; Direct Instruction; Montessori Instruction; Hooked on Phonics; Oarton-Giliihgham. ***Math Question:*** **Do you find certain strategies more successful than other when working with minority students?** Some of the responses included: One on one help; Hands on activities; Parent involvement; Convincing them that they can do the work; Teaching each other; Team competitions; Individualizing instruction based on weaknesses; Drill and practice; Repetition; One on one; Serve as role model; Give frequent assessments. **Please list any Math programs you have found to be successful in working with minority students.** Some of the responses included: TAAS Classes; Host Math Program; Block Scheduling; Problem Solving Software; Basic Math videos; Hooked on Math; Mountain Math; SRA Math; Computer Assisted Instruction. **Are you using and culturally specific pedagogical strategies? If so, please list these strategies? Where did you receive training?** Some responses included: English as Second Language – School In-Services; Differentiating In Curriculum - Rice University; Gifted and Talented – School In-Services: "Bridging the Gap" Cultural Conversations through Literacy _ Rice University.

Implications and Recommendations

The results of this survey suggest that the strategies that have the most significant influence on the performance of minority students are: Teacher Attitude; School Climate and Morale; Clear Vision; Strong Leadership; Student Expectations; Historical Achievement Related Beliefs; Cultural Awareness.
The teachers stressed the importance of encouraging students to ask questions, believing in their own efficacy, projecting a vision of excellence and believing that students can reach their potential. Learning must be student centered and teachers must understand the needs of their students. Teachers indicated that students must be accountable for their own learning. Students must be taught strategies that will assist them in successful school performance and skill that facilitate academic achievement.
Although the literature review strongly encourages Ahands-on@ activities, having students monitor their own reading and performance behavior, and making them aware of their own unproductive reading and math problem solving styles, teachers to a large degree do not utilize these strategies in their classrooms. Experts also recommend having students read a large number of books, yet these teachers do not utilize this classroom strategy. In Math it has been strongly suggested that strategies such as memorizing, drill and practice should be de-emphasized, yet the teachers surveyed do not de-emphasize this approach.

This research identifies teaching practices used by 150 extraordinary teachers that have proven effective when teaching minority students. The results of this study suggest that effective teachers employ sound research based -strategies that facilitates the academic success of minority populations.

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Using Technology in Early Childhood Environments to Strengthen Cultural Connections

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Abstract: This application-oriented paper describes the use of technology in the early childhood environment to support the development of cultural competence. Four objectives are identified and specific examples are described to aid practitioners in developing media presentations that serve to reinforce multicultural theory through the integration of technology in a manner that is suitable for young children. All of this information is shared with an eye toward methods of developmentally appropriate practice and the incorporation of technology as deemed valuable in regard to the licensure, certification, and accreditation standards of early childhood professionals.

Introduction

Society is changing. In order to survive and thrive in a new, diverse nation, individuals must adapt. The children who will guide the future must be equipped with skills to navigate on uncharted waters. As stated in the National Association for the Education of Young Children's publication, The Children of 2010 (Washington & Andrews 1998), "In a nation where no single race or culture will ultimately be in the majority, the next generation will be called upon to work together - to move beyond the injustice, intolerance, resentment, and anger that has been such weighty baggage in United States history." (p. 14). Children can't achieve this hope alone. They need help cultivating the interpersonal skills that will allow them to accept and appreciate both the commonalties and the differences that exist all around them.

Drawing on the work of James A. Banks (1996) and Stacey York (1991) the following objectives are identified to support developmentally appropriate work with young children in the area of multiculturalism and diversity.

The children will:

- form an awareness of self and explore individuality in relation to their place in the larger group;
- gain knowledge of the traditions, rituals, and practices that combine to form an individual's cultural heritage;
- build a sense of identification with others through the recognition of commonalties and move toward an appreciation of differences; and
- recognize unfair characterizations and begin to understand their roles as agents of change.

Frequently commercial curriculum materials, play props, literature, games and activities are not the most appropriate when attempting to construct an environment for children that will support the growth of cultural competence. Commercially produced materials often contain stereotypical images of costumed children in various geographical regions; the use of the English language is almost exclusive; and alternative family styles, gender roles, ability levels and mixed-age relationships are not often seen. Fortunately, the developmentally appropriate use of technology in early childhood environments is now viable (Haugland 1999) and can aid early childhood professionals in the development of methods and materials that are made in the classroom with a focus on strengthening critical cultural connections for each child.

True multicultural education involves the integration of diversity concepts into every aspect of the curriculum (Banks 1996). Often educators fall into the "tourist" trap and treat multiculturalism as a thematic unit or a specific lesson that must be covered. A month spent studying Mexico, for example, is added to the early childhood curriculum. During the Mexico unit children dine on traditional Mexican foods, listen to Mexican music, wear sombreros and serapes, and learn about Cinco de Mayo celebrations. This practice is called the tourism approach and involves the children looking at groups of people or geographic areas as if they were touring a strange and exotic place. The tourist approach serves to highlight differences, which is not the purpose of multicultural education (Banks 1996). Unfortunately, the media permeating children's lives generally follows the tourism approach as well, often going so far as to exaggerate differences as a comedic device. When children see artwork of adult Mexican males napping against a cactus, watch Speedy Gonzales cartoons, and see Mexican children photographed exclusively in traditional costume, a patronizing caricature of an individual from Mexico begins to form.

All children are harmed by this practice. Those from Mexico or of Mexican decent are clearly marginalized by these images, but other children also are impoverished. Children should not be exposed to material that trivializes others and does

not deal with their real, day-to-day living. Children can easily develop a false base of security founded on perceived superiority over others. Unfortunately, they may begin to form pre-bias prejudices if they are not given the opportunity to learn alternative methods of thinking and behaving (Derman-Sparks & A.B.C Task Force 1989).

Instead of resorting to the tourist approach to multiculturalism, educators should highlight commonalties among people and integrate diversity issues into every aspect of daily activity with children. Since commercial materials may not be suitable, technology offers educators the opportunity to integrate multiculturalism in a appropriate manner by developing material specific to the needs of the program.

Objective One: The children will form an awareness of self and explore individuality in relation to their place in the larger group.

From a child's earliest sense of awareness until approximately the age of two the major developmental task in which they engage is identifying themselves as a person separate from others. Young children must gain a clear sense of who they are and where they fit into their family, the community, and their peer group before they can begin to understand others (Derman-Sparks & A.B.C. Task Force 1989). Teachers of very young children set up an environment that is rich in opportunities for the exploration of both the familiar and the unfamiliar. They are primarily in the role of a facilitator of knowledge (Gonzalez-Mena & Eyer 1993).

Activities that label and observe facial features, skin color, and hair color and texture are suitable first steps into the world of diversity. Taking photographs of each child, both individually and within a group helps them examine their own features, compare themselves to one another, and discuss the physical characteristics that make them who they are. Children are capable of all of these tasks. They are not oblivious to differences, but generally have not yet learned to place the value judgements on them that adults often do. An open, honest atmosphere in which to explore is crucial to multicultural education in the early years.

Digital cameras are immediate and therefore are extremely useful in documenting occurrences as they happen. When the need to wait on the developing of film is eliminated children can view high-quality photographs of activities immediately after they take part in them. This immediacy is especially important for young children who are visual learners and are often not yet able to think symbolically.

Group photographs posted in the facility can easily take the place of commercially prepared posters and displays and have the added benefit of allowing the children to build up an appropriate context in which to understand and accept individuality and differences. Commercially produced media generally feature caricatures of ethnic children dressed in native costume while digital or scanned photographs of each child represent the real world and provide fertile ground for the growth of cultural competence.

Photographs of daily activities or special visitors can also be displayed at the end of the day in order to give parents or others who transport a child from school or day care facilities a peek into the day's events. Instead of the generic "What did you do today", parents can be encouraged to ask specific questions of their children, such as "I see that you talked about hair today. On the way home we are visiting Aunt Regina. What color is her hair? Is it the same color as mine? She is my sister." Families can play a greater role in their child's learning when they reinforce and build on multicultural ideas learned at school.

Teachers can expand the use of digital photographs in the classroom. Flashcards can be made by printing the photographs and laminating two cards, one with the child's eyes and the other with a view of the full face. The children use the cards to identify the eyes and faces of each child. This activity would be appropriate for use with children of toddler age. Digital or scanned photographs can be inserted into a Microsoft PowerPoint presentation or a Hyperstudio stack to allow for its continued use in many different capacities. The presentation can document a day in the facility and record each child's arrival, playtime, snacks or meals, and departure time. The presentation can then be used to replace commercial children's software, which may not be considered a viable representation of diversity for use in the early childhood classroom.

Objective Two: The children will gain knowledge of the traditions, rituals, and practices that combine to form an individual's cultural heritage.

It is crucial for early childhood professionals to help young children gain awareness of and appreciation for their own culture. By putting forth every effort to gain a familiarity with each child's family of origin, teachers or caregivers help children through this stage of multicultural education. Families are embedded in their native culture to varying degrees, assumptions about cultural and ethnic association cannot be made (Lane & Signer 1996). One way to find out about a child's family and its unique aspects is through the use of electronic family portfolios. An electronic family portfolio contains

information and artifacts that are of import to the child and his or her family members (Dodd & Lilly 1997). A digital camera or scanner and a presentation software package are used to put together this document for each child.

Family portfolios can empower children as decision-makers by enabling them to choose what will be included in their program. Furthermore, as children help select materials for their portfolios, family history and special traditions can be discussed that may never have been addressed with the children in the past. In addition, family members can visit the classroom or facility in order to construct portfolio materials. Family members can also help the child present their finished product to the rest of the group in order to facilitate diversity exploration among peers. Each of these practices aid in cementing the important bond between the child, their family, and the school or care environment.

Conferencing is also a technique that teachers and caregivers use to build relationships with families. Individual technological portfolios can be constructed for each child in order to facilitate positive connections with parents during conference visits. Photographs, artwork, and documentation of each child's development can be displayed on a computer screen. Sound files add an extra dimension to the portfolio and electronic voice recordings would allow the child to narrate sections of the presentation. Personal electronic portfolios can give a visual representation of a child that paper and pencil files cannot. A great deal more data can be incorporated into an electronic portfolio, allowing areas of interest or concern to be easily highlighted. Moreover, the portfolio can easily be updated, daily if necessary. An electronic portfolio can open dialogue in a unique manner in order to support and maintain the open and honest exchange that is an important aspect of a positive association between parents and caregivers or teachers (Newman 1998).

The community in which a child lives also plays a part in shaping individual cultural constructs. It is important that early childhood educators integrate activities that authenticate significant community connections and allow children access to people and events outside of the facility. Customized technological activities can bring the community into the classroom or care facility. Actual photographs of community helpers such as police officers, health care professionals, firefighters, grocers, and postal workers can be matched with photographs of the equipment or supplies that they use in their work. A "virtual field trip" can be conducted by the teacher that tours the community taking photographs of buildings, vehicles, and other points of interest. Presentations, games, and activities that utilize community resources help reinforce relationships already formed between children and their community as well as introduce them to new concepts. An early childhood professional that makes his or her own materials can do so with an eye toward the integration of specific multicultural concepts. Through the use of professionals of both genders, such as a female police officer, or a male nurse or including those of mixed age groups, races, and ability levels children's concepts of what is "normal" can be greatly expanded.

Objective Three: The children will build a sense of identification with others through the recognition of commonalties and move toward an appreciation of differences.

In order to gain an understanding of others, children must first identify with them in some manner. Activities that stress characteristics that groups of children have in common are the first step toward this objective. An activity involving transportation is an example of an activity that builds a sense of unity among children. Every child travels to school; they all might not arrive in the same way, but they all use some type of transportation. A discussion in regard to the various types of transportation used by the children on a daily basis can broaden to incorporate the idea that children in some parts of the world travel to school by bicycle, some travel by boat, some use a bus, and some walk. Photographs of each child arriving at school can be used to graph a chart of various types of transportation. The Internet or a technological encyclopedia can yield photographs of children around the world traveling through the use of various modes of transportation. In addition, presentations can easily be supplemented with high-quality children's literature. Ann Morris' book *On the Go* explores the diversity of transportation with photographs by Ken Heyman and simple text. As children begin to isolate events that are common to all and events that are unique to various cultures or geographic regions, they can develop a deeper understanding of multiculturalism.

Cooking activities are also appropriate to support this objective. Everyone eats, but people eat different types of food, prepare the food in different ways, and use different utensils. Preparing rice for a snack or meal can expose children to many different multicultural concepts. Many families eat rice, but they can get the rice for their meal in different ways. Some families go to the grocery store and buy a bag of rice. Some families grow rice, and still others purchase their rice already cooked. Rice can be prepared and served many different ways; boiling rice in a pot over a flame or frying rice in a wide wok are both options. Some people mix their rice with fish, pork, or vegetables. Some people eat butter and sugar on their rice. Others eat their rice plain. Rice can be served in small, shallow bowls or on wide, flat plates and can be eaten with forks, spoons, chopsticks, or the fingers. Technology compiled during a rice activity can be used to construct either classroom or individual books, games can be made, and posters or collages can be put together. For example, photographs can be printed and laminated so that children can work on sequencing as they put each step of the process in chronological order.

These activities support the young child's development by making learning relevant to their daily lives (Roopnarine & Johnson 1993). When children see a visual representation of themselves involved in activities and hear sound files replicating

the events, their ability to remember the occurrence is heightened. As an adult helps guide children through the experience of using the media, their sense of reliving the event can be richly enhanced. Each time children are exposed to a situation they integrate it more fully into existing paradigms and real learning takes place (Roopnarine & Johnson 1993).

Objective Four: The children will recognize unfair characterizations and begin to understand their roles as agents of change.

Young children are capable of empathy, which is the trait that is needed to explore how marginalized groups feel when they are treated with prejudice by majority groups. The Thanksgiving tradition in the United States is an area in which young children can consider unfair representatives of American Indians. Throughout the month of November, children in the United States are constantly exposed to caricatures of Indians involved in the first Thanksgiving dinner. Black-clad pilgrims and near-naked Indians gather together to eat turkey and corn with a complacent contented demeanor. These images are piled on top of other images of American Indians in children's media.

The Disney cartoon "Pocahontas" falsifies the life of a real American Indiana woman for entertainment purposes. The stereotypical picture of an American Indian who communes with nature and can talk to the animals is also reinforced by the cartoon. Classic "Looney Tunes" and other media portray American Indians as savages who scalp and raid with a bow and arrow. In addition, many programs use the "red" man who speaks in monosyllables as a comic foil. When the cumulative effect of these negative images is considered, it is no wonder that children develop unrealistic paradigms in regard to Native Americans.

Technology can help a teacher gather cartoons of American Indians and allow children to compare and contrast those images with both historical and contemporary photographs of American Indians as they live, work, and raise families. A picture of a stereotypical Indian teepee will elicit immediate recognition in children who may not realize that American Indians may live in frame houses, in brick condominiums, and in city apartment buildings at this point in time. It is appropriate to counter the negative media images that permeate a child's life with positive, realistic, and contemporary images that depict American Indians both as they really were in the past and as they are now. Children can consider why it might hurt an American Indian's feelings to be portrayed in cartoons as a savage. They can even begin to make decisions about hanging Thanksgiving decorations on the wall that show American Indians in a negative light, and watching cartoons that are discriminatory in nature. To see children take control of an unfair situation and work to make positive changes is what multicultural education is all about.

Conclusion

Clearly the family is the child's first teacher, but the community in which the child lives and the media to which the child is exposed can be strong determinants of values and beliefs (Hildebrand, Phenice, Gray & Hines 2000). Children generally are not required to learn cultural competence in their homes since the skills are not needed in that environment (Clark, DeWolf & Clark 1992). The preschool classroom or child care setting is often the child's first exposure to diversity and, therefore, is a natural starting point for multicultural awareness (Swick, Bowtle & Van Scoy 1994). Therefore, teachers or caregivers are given an excellent opportunity to integrate the various images that children are exposed to into a workable model of non-bias behaviors and beliefs. Using technology in a developmentally appropriate manner to facilitate cultural connections with children is a viable way in which to transform current curricula in order to fully integrate multicultural concepts and develop an understanding of diversity that can last a child a lifetime.

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Where is the "Any Key", Sir? Experiences of an African Teacher-To-Be

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Abstract. This presentation focuses on efforts to assist first-year students from developing communities in beginning computer classes at the Technikon Free State (TFS) in South Africa. The research is based on the experiences of Thabo, a student teacher from a rural area who was willing to live in the poorest conditions just to be able to attend a tertiary institution. The compulsory computer literacy classes posed a major problem because he had never touched a computer in his life. On his first day the class mocked him when he indicated that he could not find the "any key"! The pace was just too fast and he also did not have a computer of his own. He ultimately failed the course. After researching the nature of students' problems, lecturers at the TFS drew up a seven-point action plan that might serve to alleviate the initial stress experienced by students like Thabo.

Thabo's Story

Second-year student Thabo Mbokweni lives in a temporary structure (often called a "schack") in the Mandela squatters' camp in the Bloemfontein-Mangaung area, a typical South African settlement with rows and rows of corrugated iron dwellings - the only shelter of many against the harshness of the elements.

Thabo came from a rural area to prepare himself to become a technical teacher. His family is poor, but he fared well at school and they decided that they were willing to sacrifice everything for a good education for their son. Thabo's father is a municipal worker in a small village, while his mother is a domestic worker. They succeeded in saving enough for the fees. The problem, however, was that they could not afford hostel accommodation as well. Thabo then decided to share a shack with a cousin working in the city.

The two young men's dwelling is surrounded by hundreds of shacks – not two similar in construction or size. The only water is available from the tap in the street, but they have an electricity supply where a prepaid card system is used. One electric light, a two-plate stove, a radio and a small television set make up their earthly wealth.

Thabo is an intelligent boy. He has always dreamt of being a teacher and creating a better life for himself and his parents. There was only one major problem – he had never in his life touched a computer and computer literacy is a compulsory subject for student teachers at his institution. His first day in class was a disaster. The whole class burst into laughter and mocked him when he told the lecturer that he could not find the "any key" – not the least the young man from an advantaged community where computer literacy is as commonplace as the traditional biltong and braaivleis.

The pace was just too fast for Thabo, resulting in the fact that he became completely lost somewhere between double click and pull-down menus. Furthermore, because he did not have a computer of his own, he could not get any other practice than during the formal class periods. He ultimately failed the course. He would have to repeat it during his second year. He was not happy, because the fees were high and he did not want to disappoint his family and place an extra burden on them.

Thabo is now in his second year. He is one of the brighter students in the computer literacy class and spends most of the practical classes helping those who cannot find their "any keys". But was it necessary for Thabo to have gone through all the initial trauma? Could other teaching methods and approaches not have given him the opportunity to adapt to the unfamiliar situation more easily?

What Does Our Research Tell?

Accommodation and Transport

In surveys undertaken at the Technikon Free State, it was found that, in some of the classes, up to 40% of the students from rural areas live in less than appropriate conditions in the townships surrounding Bloemfontein. Although some students were not willing to discuss their accommodation problems in detail, it was estimated that 10% of these students live in temporary structures, similar to those of Thabo, as described above. Another 30% rent small, unfurnished rooms in the township. In most cases they share these rooms with at least one other person. Thus it can be understood why the surveys indicated that fewer than 40% of all the students from the developing communities have their own rooms for study purposes. Students also complained about noisy and unsafe conditions. A few remarks on problems experienced in this regard are the following:

- *It was my first time in Bloemfontein and it was difficult for me to go through all the township sections to look for accommodation. Now I don't have money to come to school every day.*
- *I share a room with family members. Each room in the house is rented out. Some of the people are not students, creating an environment not suitable to study.*
- *I rent a room and share it with a friend. It's very noisy. I cannot study well, so I am forced to stay in the library until late in the evening.*
- *There is no table and no chair in my room. A friend I am staying with makes a lot of noise with his radio and TV.*
- *The place where I stay is not safe, and taxis only operate until 19:00 in this area.*
- *I do not have electricity in my room.*

Daily transport poses another major problem to the students. Some live in the Botshabelo and Thaba Nchu areas (about 70 and 90 kilometers respectively from Bloemfontein) because they cannot find or afford accommodation in the city. Almost two hours a day is spent on buses and students complained about exhaustion and not enough time to study or attend extra computer classes ("I have to travel by bus from Thaba Nchu every day, which makes me very tired, so I cannot study when I arrive home"). Others who live in the Mangaung township or surrounding informal settlements said they simply could not afford the daily taxi fare of R6 ($0.75) for travelling to and from the Technikon ("I can't afford R6 a day, so I have to be a pedestrian"). A few students admitted that they walked to the TFS every day ("I travel on foot to school each morning and back, for one hour. Sometimes when it is raining I don't come to classes").

Financial Problems

It seems as if many students make use of loans in order to be able to study at the TFS. The natural and almost casual way in which many treat their financial problems is amazing. They suffer, but they succeed in "coping" and "managing", and that is the most important thing to them, because, in the end, they will have earned a better future for themselves:

- *My parents have to borrow money to see to it that I pay for everything.*
- *I really don't know how I manage, but I do.*
- *If I do not have enough money for transport, I am forced not to eat lunch.*
- *I try to find temporary jobs over weekends.*
- *I'm coping. Try to find bursaries. Money for food is sometimes a problem.*

Possession of Technology

A group of 150 first-year students in a Computer Literacy class in the Faculty of Management at the TFS (many of them teacher education students) was requested to indicate their access to technology at their dwelling places, including computers and related equipment. The findings are represented in Tab. 1. The most promising factor is that more than 93% have access to an electricity supply. Very high percentages also have access to radios and television sets – although it may not always belong to themselves. The possession or access to telephones lies at 55%. The alarming fact, however, is that only 7% of these students have a computer at their disposal after hours - not to mention Internet connections and E-mail. This means that they must be able

to fit in time to work in the computer laboratories during scheduled times (which is not always easy, because many of the labs are used throughout the day for lecturing and practical sessions).

Technology	% availability
Electricity	93
Radio	91
Television	82
Satellite TV	5
Telephone	55
Computer	7
Printer	5
E-mail	3
Internet	3
Audio recorder	55

Table 1: % availability of technology to a group of students at the Technikon Free State

The survey was extended to a group of 47 second-year Computer Science students. Very similar results as for the other group were obtained, except for a higher possession of computers (38%), printers (31%), E-mail (10%) and Internet (7%). This is, however, still far from the ideal situation for Computer Science students. The students were also requested to indicate possible solutions to their problem of access to computers. The overall indication was that students need more and longer access to the computer labs. Several asked for 24-hour accessibility and a card system by means of which computers can be operated. There were requests for more student assistants and also for the implementation of a Help Desk in the IT department.

Initial Problems in Computer Classes

The above-mentioned group of first-year students was also asked to indicate their initial problems in the compulsory Computer Literacy course. (The survey was conducted about two months after the classes had commenced). A fairly clear pattern of problems was revealed: Fear of the computer ("Everything was difficult and I was nervous because it was my first time"); uncertainty ("The first time I was just confused at what's going on with this TV-like instrument"); keyboard problems ("First of all I didn't know how to use a keyboard" and "I did not know how to operate and communicate with it"); using the mouse and clicking ("I tried but could not get the whole thing right"); SAVE, OPEN and CLOSE ("I didn't know how to get back the information I had because it didn't show up the next time"); and impatient assistants and lecturers who do not understand that students had never used a computer before ("Lecturers and assistants were not people-oriented. They started as if everyone in the room knew how to use a computer. The way they lecture us is difficult"); difficulties in following instructions in the practical books, etc. The following comments from students on their initial experiences may further reveal the nature and extent of some of these problems:

- *Everything was difficult except pressing the computer, which is what everybody can do.*
- *I did no know how o turn on the computer and type it.*
- *Everything was new for me and I encountered a lot of problems, e.g. why do we use UNDO?*
- *Firstly, the assistant was horrible, unfriendly and acted as if we were supposed to know everything about computers.*
- *The time was not enough to do the practical work.*
- *I did not understand all the multiple-choice questions in the test.*
- *Assistants don't show us what to do. They do it for us.*
- *We were kept in a pool of darkness with nobody to help us.*

For every prospective computer user, the major obstacle is clearly to achieve a basic level of computer literacy. According to Pearn and Down (as cited by Garavan & Mc Cracken 1993 p. 8), a learner has to overcome the following in order to reach this basic level:

- Emotional resistance.
- The lack of availability of tools.

- Limits on the time taken to become computer literate.
- Lack of assistance.
- Fear of interacting with a computer.
- Fear of not being able to cope.
- A desire to hang on to the familiar ways of doing things.

The comments of TFS students show a remarkable resemblance to the above list. Many of the students reported that, after some time, they started to cope and even enjoy the classes. After two months of lecturing, however, about 50% of the respondents were still uneasy about many aspects of the computer lessons. (Fortunately not many students felt as negative about computers as one of the respondents who wrote after two months: "I didn't know a thing about computers and still I don't know".)

In a study undertaken by Callaghan and Smit (2000), also in the South African context, it was found that most students in their investigations took at least one month just to overcome the initial barriers on the road to computer literacy. The authors also mention that only a few of the students had balanced ideas of what they expect of the computer. In accordance with the views of these authors, we also argue that we cannot ignore these facts and should address them in our computer classes.

The following remark also serves to place the problems of TFS students in their South African social context: "When I went to the class of an African lecturer who explained in my mother tongue, I understood much better". It must be understood that almost all the respondents were African students with English as their second language. Their lecturers were mostly Afrikaans-speaking persons teaching through the medium of either English or Afrikaans. (At the TFS a dual medium of instruction is used, Afrikaans and English, two of the eleven official languages in the country.) This fact may have contributed to students' problems with the multiple-choice tests, for example.

Suggestions on the handling of Computer Literacy Classes

Students were asked to explain how they managed to cope with their problems, and also to make suggestions on ways of improving the teaching and learning in beginning computer classes. The following comments more or less summarize the overall trend in the responses:

- *I kept on for asking assistance and going through the work all by myself.*
- *I just concentrated and worked harder.*
- *I started to ask questions where I didn't understand.*
- *Getting help from my classmates.*
- *Tried to learn at my own and ask people who are familiar with the course.*
- *By attending extra classes.*
- *I just attended the open-lab times.*
- *Practice is the solution.*
- *I learnt to teach myself following instructions in the book.*

In considering the above comments, clear signs of growth in students can be recognized. Students started to take responsibility for their own learning on the one hand and, on the other hand, they started to realize the value of seeking for assistance from peers and other knowledgeable individuals. These are important directives when deciding on a more effective approach to use in lecturing.

What about a co-operative learning method?

Some of the suggestions of the students in the previous paragraph show resemblances with co-operative learning methods as well as with self-instruction methods. A literature search gave indications that not many institutions over the world experience problems quite identical to those of our TFS students. It became obvious, however, that much research has gone into researching the effectiveness of specific teaching methods in Computer Science courses. The discussions on co-operative learning methods in particular proved to be very valuable. The notes of Henry Walker (1995) on collaborative learning in computer classes provide a number of very applicable guidelines:

- All students MUST work in groups for the first two weeks of class; thereafter, individual work is allowed but groups still encouraged.
- Groups of not more than two or three students are recommended.
- Formal lectures rarely extend beyond 15 minutes per class.
- Labs at the beginning must be very clear concerning what is to be done and turned in.
- During group work the instructor circulates, regularly asking if there are questions.
- The faculty member needs individual contact with every group every day.
- When common problems arise, the class convenes as a whole to discuss the difficulties.
- While labs are collaborative exercises, programs and tests are to be individual efforts.

Walker feels that by means of the above approach, active learning by students is promoted and a variety of learning styles can be accommodated. Furthermore, oral and written communication skills are developed, the reading of the text is required, and the responsibility for learning is explicitly placed with the students (p. 1).

A jigsaw technique may also be tried out in the computer classroom. Each student in a group of four or five students is assigned a specific task. The groups then break up and all those with identical assignments group together to work on their specific task. When accomplished, each person goes back to his/her original group with the responsibility to teach the other members what has been learnt in the single-task group (see Aronson 2000). Group members now have to work together as a team to reach a common goal and each member depends on all the others. The jigsaw process encourages listening, engagement and empathy by giving each one in the group a very essential part to play in the activity. (In the South African context, the language problem may also be addressed if group members are sharing the same mother tongue.) Salikin and Cummings (1997) give an interesting example of a co-operative learning computer lesson in which the jigsaw method is used.

The Worcester Polytechnic Institute, WPI (1998) provides valuable guidelines on the assessment of peer/cooperative learning in the introductory science curriculum. Although meant for students at a higher level of study, Prey (1995) guides the reader on using a cooperative learning technique in an undergraduate computer science classroom.

Callaghan and Smit (2000) noticed that no respondent in their study selected the option of working entirely on his/her own and no student wanted the lecturer to "talk and chalk" only. They found it interesting, however, that a very high percentage of their respondents preferred to work on their own, with only help from the lecturer when needed. Although not specifically investigated, these authors feel that group work would be beneficial, especially if it could be done in the mother tongue.

A Seven-Point Plan for Thabo and His Friends

In considering our research and other views referred to in this discussion, we suggest the following seven-point plan to be implemented and further investigated in the Computer Literacy classes (and other beginning Computer Science classes) at the TFS in 2001:

1. **Awareness:** All IT lecturers must (again) be made aware of the nature and extent of the social, economical and cultural problems many students from developing communities are experiencing, problems that may have a profound influence on their performance in computer science courses as well on their personal well-being. They must also take notice of students' specific problems in the beginning phase of a computer science course, in particular those who have never before worked on a computer. A survey by means of which the prior computer knowledge of students is determined, may prove to be very valuable. If possible, students without any prior computer experience should be grouped together. The careful compilation of student profiles may also help to better understand students and their personal circumstances (and, hopefully, their "any key" problems!). Students may also be encouraged to keep reflective journals in which their specific fears and frustrations can be pinned down.
2. **Orientation:** In the beginning enough time should be spent during a long enough orientation period to acquaint students with the basic elements of a computer keyboard and provide them with basic hands-on experience, in particular in using the mouse and doing the "double-clicking". They should also be shown what the computer can and cannot do. Their fears and expectations need to be discussed in an informal way (see Callaghan & Smit 2000).

3. **Teaching methods:** The possibility of the use of alternative teaching methods such as co-operative learning in theoretical as well as practical classes should be thoroughly investigated and exploited.
4. **Language:** The possible language problems of students need to be acknowledged and addressed, also when referred to instructions in practical guides or manuals. The language used in test and examination questions needs to be considered very carefully. More attention needs to be given to computer terminology in general.
5. **Access**: The effect of the fact that a very large percentage of students do not have computers of their own should be considered in coherence with possible accommodation, transport and financial problems. Appropriate and sufficient open-lab times need to be discussed and negotiated with students.
6. **Assessment:** Assessment techniques need to be revisited; it should be of a continuous nature, with tests in line with what has been done in classes. A co-assessment technique where peer assessment as well as teacher assessment is used, may be considered (to fall in line with co-operative learning methods), as well as the possible introduction of portfolio assessment
7. **Feedback:** Lecturers (and lab assistants) must be willing to listen to their students and not be afraid to ask for feedback on lessons or specific teaching methods.

Conclusion

The researchers are of the opinion that the implementation of the above seven-point plan could bring about a marked difference in the ability of students to cope with problems in beginning computer classes. It is important that the effects of the implementation of such a plan would be carefully monitored and alternative plans developed where necessary. Ultimately, the institution as a whole could benefit from a successful implementation of a plan in which "any key" problems are to be foreseen and avoided.

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The Digital Divide in Schools: We Can Make a Difference

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Abstract: Overcoming the issues surrounding the Digital Divide often appears to be insurmountable. However, in our recent examination of 28 research studies and reports we found the emphasis to frequently be on matters of access and not equity in the learning environment. The studies dealing primarily with access suggest the gap between socioeconomic groups is declining. Yet, access to computers does not provide equitable learning environments. Findings from the literature we examined indicated three primary areas that influence the digital divide in the school system. These areas are frequency of use, the computer experience of students, and technology training for teachers. The encouraging aspect of our review of the literature is that teacher educators can have a positive influence on these areas. We can make a difference in the digital divide in the school systems.

Introduction

The digital divide has been the subject of numerous documentaries, books, and articles (Bolt 1999; Bolt & Crawford, 2000; Harrell, 1998; Schon, Sanyal, & Mitchell, 1999) and continues to gain more attention through the plethora of materials documenting the technological access opportunities for students in U.S. public and private schools. Because the focus of the digital divide is so vast, statements coming from these materials range from "the digital divide is not as serious a problem as it first appeared" (United States Internet Council & ITTA, Inc., 2000, p. 20) to "One can't get around the statistics. There is a 'digital divide' in this country" (Rosenthal, 2000, p. 10). For this article we will define the digital divide as the difference in use of technology by schools based on ethnicity and socioeconomic status. Although strides are being made in giving poor and minority students more access to technology, the ways technology is used with these groups is often left unexplored. There are some exemplary studies (Attewell & Battle, 1999; Coley, Cradler, & Engel, 1998; Wenglinsky, 1998) investigating how digital divide issues and the use of technology influence the academic success of school-aged children, but overall there is scant literature available with strong methodology sections or data that can be generalized beyond the scope of the study. Nevertheless, the studies available do provide valuable insight into the use of computers and the digital divide. This article will examine the digital divide from the perspective of school technology integration for children in the United States using twenty-eight research studies and reports as a foundation.

Background Information

The Effectiveness of Technology on Student Achievement

No matter how one defines it, studying the impact of technology use on student achievement is just beginning. Examining student achievement data with respect to technology is a difficult task because research reports either define student achievement in a variety of ways, or do not define it at all. For example, in Mann, Skaeshaft, Becker, and Kottkamp's study (1999), scores on the Stanford 9 were used to measure the effectiveness of technology use on student achievement. In contrast, in a University of

Michigan study students were assessed using both a standardized test and a performance based biology test (Huebel-Drake, Mouradian, Stern, & Finkel, 1995). Dr. Martha Stone is quoted in *The Impact of Education Technology on Student Achievement* (Schacter, 1999) as saying "one of the enduring difficulties about technology and education is that a lot of people think about the technology first and the education later" (p. 10). It is critical that more studies focus on how educational technologies can enhance the learning process for students.

Higher-order thinking and critical thinking is one area where research of this type has already begun. Reports (Thurow ,1999; U.S. Department of Commerce ,1999, U.S. Department of Labor, 1991) state that workers of tomorrow must be able to think critically and use higher order thinking skills and strategies in a variety of ways. The term "higher order thinking skills" refers to Bloom's Taxonomy of Thinking Skills, which begins with the lowest level, knowledge, progresses to comprehension, application, analysis, and synthesis and concludes with the highest level, evaluation. In today's classrooms, students are often assessed at the knowledge and comprehension level, because assessment is relatively easy to write and grade. However, many items at the lower levels of Bloom's taxonomy (knowledge, comprehension, and application) do not develop and foster the critical thinking strategies in students. By forcing students to dissect and organize information in new ways (analysis), make new connections with existing knowledge (synthesis), and critique the usefulness of many types of information (evaluation), students can gain experience in critical thinking as well as develop a richer and fuller understanding of the content.

Several studies (Berson, 1996; Chessler, Rockman & Walker, 1998; Harel, 1990, 1991; Pogrow, 1996; Scardamalia & Bereiter, 1996; Wenglinsky, 1998) document that students demonstrate stronger higher order thinking skills and problem-solving techniques with computers as compared to students who did not use computers for higher order thinking skills and problem-solving. Findings from other studies suggest that the use of technology can enhance student achievement scores (Cognition and Technology Group at Vanderbilt University, 1994; Coley, Cradler, & Engel, 1998; Kulik, 1994; Mann, et al., 1999; Sivin-Kachala, 1998; Wenglinsky, 1998). Studies such as these imply that student use of educational technologies, specifically computers, can enhance their learning environment. Nevertheless, there are many areas where researchers and educators can work together to improve the educational experience of students through the use of technology. Knowing how technology is used in the schools, in curricular programs, and with various groups of students is a critical component of this issue.

Technology Access in the School

Many states and school districts are making progress toward putting computers into public school classrooms. *Computers and Classrooms: The Status of Technology in U.S. Schools*, a policy information report by Coley, Cradler, & Engel (1998), states that 98% of all schools own a computer with the typical number of computers per school being between 25 and 50 (Coley, et al., 1998, p. 11). This has caused the average ratio of computers to students to drop from 19.2 students to one computer in 1992 to a current ratio of 5.7 students to one computer (Coley, et al. 1998) with Florida and Wyoming having the lowest student to computer ratio (5.9 to 1) and Louisiana having the highest (16 to 1). A 1999(b) report, *Student Computer Use*, from the U.S. Department of Education, expands on these findings showing that there have been dramatic increases in the frequency of computer use by students between 1984 and 1996. In the 4th grade, the percentage of students who stated they used a computer at school once a week rose from 15.5% in 1984 to 36.0% in 1996. It is important to note that schools with a high percentage of minority and Title I students have above average computer to student ratios (Coley et al., 1998, p. 13). Schools containing 90% or more minority students have an average ratio of 17.4 students to one computer, and as the percentage of Title I students increase, so does the ratio of students to computers (Coley, et al., 1998, p.13).

One must also take into consideration that even though most schools have computers, many of those computers are not connected to the Internet. As stated previously, 98% of all schools have computers, however, current statistics (Education Week on the Web, 1999; U.S. Department of Education, 1999a) show that only 89% of schools have Internet access making the average ratio of students to computers 13.6 to one. The disparities that exist in computer access continue regarding Internet access and are actually more pronounced. Schools that have less than 11% of their students receiving free or reduced lunch have a seven to one student to computer ratio (U.S. Department of Education 2000a, p. 2). This increases as the number of disadvantaged students increases peaking at 16 to one in schools where 71% or more of the students receive free or reduced lunch (U.S. Department of Education 2000a, p. 2). The

percentage of minority students in a school has disparaging statistics as well, going from 57% of instructional rooms having internet access in schools that have fewer than 6% minority population, to 37% in schools that have 50% or more minority students (U.S. Department of Education 1999a, p. 1).

These research findings regarding technology access at school provides researchers, educators, and other stakeholders with an abundance of statistics. Yet, these statistics prompt even more questions. For instance, are schools counting all computers in the school (broken ones in storage closets, the administrator's offices, etc.) or are they counting equipment that students have easy access to during the typical school day (classrooms, libraries, and computer labs)? Nevertheless, these statistics provide all stakeholders in the educational system with a starting point. By making connections between technology penetration and the various uses of technology in schools one can begin to explore how this separation can influence students' success in school and in the future.

Making the Connections

Digital divide studies often measure access to the technology; yet, access alone does not ensure equity. Merely counting computers and the number of times a students can use a school computer will not eliminate the digital divide problem in the school systems. There are complex issues associated with the digital divide in the schools. In order to gain insight into these issues we conducted an analysis of twenty-eight studies and looked for areas that dovetailed when examining the use of educational technologies in the schools. We found three areas that appear to impact the digital divide in schools: frequency of use, the differences in students' experiences with respect to computer use, and technology professional development for teachers.

Frequency of Use

Many times the idea is presented that if we equalize the time students can use computers at school this will diminish or completely eliminate the digital divide. If one views the digital divide simply as an issue of access this would be true. However, the frequency of computer use does not necessarily lead to academic gains. In *Teacher Use of Computers and the Internet in Public Schools* (U.S. Department of Education, 2000b) and *Does it Compute?* (Wenglinsky, 1996), the authors state that students in Title I programs and minority groups report more frequent use of computers than those not receiving special services. However, this frequency of use did not lead to a gain in achievement because the computer was used primarily for low-level thinking activities like drill and practice. This does not mean that drill and practice computer experiences are never appropriate; however, using drill and practice as the only computer experience appears to negatively impact student achievement. Wenglinsky's significant research study presents the idea that it is the quality of technology use that can positively impact the achievement of all students—not the frequency of use.

Differing Computer Experiences

The opportunities students have regarding computer use varies widely. *Teacher Use of Computers and the Internet in Public Schools* (U.S. Department of Education, 2000b) is one such report that provides evidence for this idea. Students in high poverty schools (with 71 percent or more of students eligible for free or reduced-price school lunch) used computers for drill and practice 35% of the time as opposed to students in low poverty schools (with a free or reduced lunch population of less than 11 percent) who used computers for drill as practice 26% of the time (U.S. Department of Education 2000b,p. 2). This is in contrast to students in schools with the lowest number living in poverty who were more likely to assign students work involving computers applications, research using CD-ROMs, and research using the Internet than teachers in the highest poverty schools. Minority, poor, and urban students were more likely to use computers for lower-order thinking skills than their white, non-poor, and suburban counterparts.

Wenglinsky's (1998) *Does it Compute?* report provides striking statistics on how computers are being used for students in 4th and 8th grade. In the 4th grade, data was obtained measuring the percentage of students using computers primarily for learning games and activities that involved higher order thinking

skills. Asian, Hispanic, and White students used learning games more than 55% of the time as opposed to Black students who used learning games 48% of the time (Wenglinsky, 1998,p. 13). Black students in the 4th grade used the computer primarily for drill and practice activities (Wenglinsky, 1998,p. 13).

The results for 8th graders are even more dramatic. Teachers reported that Asian students used simulations and other higher-order thinking applications for their primary computer use 43% of the time while only 14% of Black students used simulations and higher-order thinking applications as their primary use (Wenglinsky, 1998,p. 13). Whites and Hispanic students used the computer primarily for simulations and higher-order thinking applications 31% and 25% of the time. These findings suggest that students are receiving different learning experiences with computers and these differences can be categorized according to ethnic groups. The reasons for this disparity among computer experiences provided for students needs to be explored. One area that does influence the digital divide in schools is the training provided for educators to use technology in their classrooms.

Teacher Training

Data describing the importance of professional development involving technology for all teachers can be found in digital divide studies examining schools. One of the primary reasons given by several studies (Coley, et al., 1998; U.S. Department of Education, 2000b; Wenglinsky, 1998) of why teachers use technology differently with certain types of students was technology training. For example, Wenglinsky (1998) noted that for 4th and 8th graders in his study, students in urban and rural schools were less likely to have mathematics teachers who had been trained in technology over the past five years than suburban students. He went on to state, "Teacher's professional development in technology and the use of computers to teach higher-order thinking skills were both positively related to academic achievement in mathematics." (Wenglinsky, 1998,p. 4). These findings suggest it is critical for teachers to have ongoing and exemplary professional development with respect to technology use in the classroom. This involves not only learning how to use technology but also how to integrate it into the daily learning environment.

Therefore, in order for teachers to feel comfortable using technology in their classrooms, training must take place in such a way that makes them feel confident in their abilities. In a CEO Forum (2000) report on assessment of technology training, the authors stated, "To achieve sustained technology use, teachers need hands-on learning, time to experiment, easy access to equipment, and ready access to support personnel who can help them understand how to use technology well in their teaching practices" (p. 129). However, many schools do not have this type of technology training and support for their teachers. A 1992 survey of district coordinators found that on average, only 15% of the computer budget is spent on training (CEO Forum 2000, p. 136). This is supported by the study *Technology Support: Its Depth, Breadth and Impact in America's Schools* (Ronnkvist, Dexter,& Anderson 2000) which reported that although 87% of schools have a technology coordinator only 19% of them are full-time (p. 6). The professional development of teachers impacts not only themselves but also their students' potential achievement.

Implications and Suggestions for Future Research

The data on the digital divide available to researchers, educators, and other stakeholders in the educational system strongly indicates students from certain minority groups and economic groups do have different experiences than their White, high-income counterparts. What is encouraging is that teachers and teacher educators can affect and change these experiences. Educators at various levels can improve the preparedness of teachers to effectively use educational technology in their daily teaching. District-level professional development and teacher education programs must get teachers comfortable with using technology and equip them with ideas and strategies to use technology in engaging and meaningful learning environments. Providing all students with challenging computing opportunities is critical. Allowing all students to obtain, organize, and evaluate information, conduct research and other higher-order thinking skills will assist in closing the digital divide in the schools.

There are numerous areas where researchers can document the status of the digital divide in the educational system and lead educators in the direction of improvement. Researchers can examine in detail how computers are used in the schools. This type of study can prompt teachers to closely examine their habits when using computers. It is also important that we examine whether certain academic curricular

programs (local, state, and federal) that use computers are enhancing or hindering student achievement. Curricular programs that appeared to be successful in the past may no longer be appropriate for today's students, and may be adversely affecting them. We need to shift from merely examining the number of computers in a classroom or lab to focusing on how the technology is being used to enhance the learning environment. This investigation needs to include the examination of data from various ethnic groups, academic levels, and learning styles.

In summary, there are significant digital divide issues that need to be overcome in the school system. Issues such as frequency of use, students' computer experiences, and professional development using technology for teachers are within the control of stakeholders in the educational system. Only with the assistance of researchers and stakeholders can teachers and administrators make a difference in striving to provide an equitable learning experience with computers for all students.

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Technology Empowers a Diverse Population of Students: Results From a Technology Professional Development School

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Abstract: This study documents the experiences of a school-university partnership initiated in January, 1998, between Lipscomb University and Glencliff High School, both of Nashville, TN. The partnership was established with a focus on the preservice training of university students and the professional development of inservice personnel, with a particular focus on technology. The partnership strove to follow guidelines for professional development schools (PDS) as established in research. Unique characteristics of this PDS developed as a result of the facts that Lipscomb is a small, private university with limited diversity and Glencliff is an inner-city school with tremendous diversity. Annual studies have been conducted using qualitative research methodologies. Although the research indicates success in several areas, the valuing of diversity and community has evolved as the outstanding hallmark of this partnership.

Introduction

The changing nature of schools today often leaves administrators and teachers struggling to adjust to dramatic changes that occur often over short periods of time. In 1988, I began to teach at Glencliff High School, a large urban, public school, located in Nashville, TN. Over a twelve year span to the year 2000, the school as well as the entire school district experienced remarkable change, particularly in two areas: diversity and technology. Although those two areas may appear to be mutually exclusive, the establishment of a Technology Professional Development School at Glencliff has shown that the availability of technology can do much to alleviate the growing pains that result from the remarkable changes in diversity. The purpose of this presentation will be to share the results of research conducted in the spring of 1999, as well as discuss on-going programs.

Concerning the Changes in Diversity & Technology

Today, the Nashville population of over 600,000 residents includes approximately 89,500 immigrants and refugees. These new residents have come to this country from over 100 countries and speak more than 75 different languages. The school age children of those families often know little English and, therefore, must be placed in English as a Second Language (ESL) classrooms. In 1988, Metro school system enrolled 739 ESL students. That number has grown to 4504 students at the beginning of the 2000-2001 school year. In 1995, Glencliff High School became one of two designated ESL high

schools in the city. At the time, Glencliff enrolled approximately only 50 ESL students. Today, however, 25% of the student population (approximately 400 students) live in homes where English is not the language of choice. One ESL counselor and eight full-time ESL teachers currently work at Glencliff. The curriculum for the ESL classes was developed to assist the students in acquiring sufficient language skills to be able enroll in the regular classrooms. Unfortunately, since the ESL students are generally separated from the rest of the student population, they often fail to feel a part of the normal school culture. Other students rarely associate with them, primarily because of the language barrier. The ESL students experience a sense of isolation.

In 1988, computers were just beginning to appear on the educational horizon. Very few of the Glencliff teachers showed much interest. Many teachers considered them merely a diversion from the classroom routine. Teachers who accepted computers often only used them to allow students to play computer games when they were finished with their work. Only a few teachers considered that those early computers could be valuable tools for both teachers and their learners. Through the efforts of the administration, Glencliff currently has four computer labs in addition to areas for computers in both the media center and the counseling area. School literature (September, 1999) reports a computer/student ratio of one to six. Despite those numbers, however, most of the faculty fails to use computers as an instructional tool in their classrooms. In fact, only 25% of the teachers have one or more computers in their classrooms. Many teachers now acknowledge the instructional value of computers, but they lack the training to effectively use them.

Role of Technology Professional Development School

In February 1998, Glencliff High School and Lipscomb University agreed to form a Technology Professional Development School (TPDS). Initially the primary purpose of this alliance was to enhance the training of preservice teachers and to facilitate the professional development of inservice teachers with a special focus on technology (Thornthwaite, 1999). Consistent with those goals, the professors at Lipscomb conducted free technology workshops for the Glencliff teachers and would follow-up with individual assistance as needed. The inservice personnel at Glencliff began to mentor the university students who enrolled in the university's secondary methods course.

As part of this symbiotic relationship, the professors and teachers would collaborate on the best approach to address specific needs. One project grew out of the university's concern that their students had limited experience in working with diverse cultures. This project requires that each student in the university's secondary methods course collaborates with a group of ESL students from a single country. Each group is challenged to develop a multimedia presentation about the homeland of the ESL students. The university and high school students meet together on both the high school campus and the college campus to plan and create their presentations. Each semester, the collaborators show their finished product to an audience of high school students in the school auditorium.

Certainly, literature abounds with writings that document a myriad of programs designed to reform educational systems though the activities of Professional Development Schools (Abdal-Haqq, 1998; Clark, 1997; Darling-Hammond, 1994; Demsey, 1997; Hoffman, Reed & Rosenbluth, 1997; Levine & Trachtman, 1997; et al.).

Some PDS research addresses the importance of the empowerment of teachers (Duffy, 1994; Zeichner & Miller, 1997). Indeed, Book (1997) writes, "empowerment is part of the goal to be accomplished" (p. 198). Initial research concerning the accomplishments of the Glencliff-Lipscomb PDS showed that the collaboration was indeed providing a more realistic preservice training for the university students (Thornthwaite, 1999). Additionally the PDS was beginning to provide empowerment for the inservice teachers.

To the delight of both the university and the high school, a serendipitous benefit derived from the ESL project. Dr. Lydon, Glencliff's ESL counselor, first recognized that the project was empowering the ESL students simply because they were being given an opportunity to share information about their homeland. This opportunity allowed them to be the expert and helped to break down their sense of isolation. Additionally, Dr. Lydon maintains that the project has increased the learning skills of her students through the aid of technology. The ESL students are thrilled by the availability of information about their homelands that can be found on the Internet.

With the approach of the third anniversary of the Glencliff-Lipscomb TPDS, plans are underway to continue on-going research. This research has made it apparent that the Glencliff-Lipscomb TPDS has helped both Glencliff and Lipscomb to adjust more smoothly to the dramatic changes in diversity and technology. As a result of this partnership, computers at the high school are being used on a more regular basis and the ESL students are finally breaking down their sense of isolation.

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Linking Up Through Solar Energy - The Story of the Gelukwaarts Farm School

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Abstract: This paper highlights the initiatives to develop farm schools in a predominantly rural area in South Africa. Of the 2500 schools in the Free State province, 63% are farm schools. The remoteness of these schools, as well as the absence of basic facilities is stumbling blocks in the delivery of sound education to communities. The lack of infrastructure is also responsible for attracting teachers with low qualifications, resulting in the offering of low quality education. The Gelukwaarts Farm School took the initiative to emerge from the typical farm school set-up by utilizing modern communication technology driven by solar power to get their computers connected to the World-Wide Web. New communication channels have opened, and teachers and learners are no longer confined to the radio and out-of-date newspapers. By utilizing lots of sunshine the school emerged from a half-forgotten farm school to a school with informed teachers, learners and parents.

Orientation

The Free State (FS) province, the third largest province in the Republic of South Africa (RSA), covers 129 480 square km or 10.6 % of the land. Although it is relatively large, it accommodates only 2.6 million people or 6.5% of the total population (Statistics South Africa 1998). The economic activities in the Free State mainly center around agriculture with some mining in the north/north-western areas. A recent study (Statistics South Africa 2000) indicates that the Free State is the province with the highest proportion of households in the lowest expenditure category. Thirty-nine percent of all households spend R600 ($80) or less per month on goods and services. Almost a third (31%) of the population live in the rural areas in small villages and on farms where the infrastructure is not conducive to education. Nevertheless, the Free State has the largest number of farm schools in the RSA.

The existence of farm schools is a very unique characteristic of the African school system. It originated in the 1950s when Government promulgated the so-called Bantu Education Act. This led to the introduction of the category state-aided schools, which were created mainly to accommodate the children of farm workers. The establishment of such schools largely depended on the willingness of the farmer to make land available for the erection of a school building. Farmers had two options in erecting school buildings: they could either carry the entire cost or opt for a state subsidy covering 50 % of the cost with the obligation to make the facilities available for nine years and eleven months for education purposes. The state in turn provided furniture, learner support materials and the salaries of educators. In 1993 the subsidy structure was revised by extending the subsidy amount to 100% of the cost and the period to 20 years. The regulations also allowed for the level of education to be extended to include standard Grade 12 classes. The Department of Education (DoE) also extended the curriculum to include agricultural, hotel keeping and catering subjects in some of the larger farm schools.

Several factors have had a negative impact on the efficiency of the farm school system. Among the problems faced by farm schools are the following:

- The learners at farm schools are mostly the children of the farm laborers and farmers will often expect them to be available for additional labor, resulting in the disruption of the education process.
- Parents' literacy levels are often low, which affect their participation in their children's education.
- Lack of supervision in small schools leads to a lack of educator accountability.
- Educators often have to teach five to six grades per class. Many schools only offer tuition from Grade 1 - 6, all in one classroom.
- Transport problems lead to frequent absenteeism; some learners cover long distances to and from schools (15 km one way on foot in some extreme cases). A lack of hostel facilities in nearby towns and villages as well as the low income of parents prevent many learners from furthering their education after Grade 6.
- District officials often neglect farm schools in their planning and visits to schools.
- Change of farm ownership and worker evictions make farm schools vulnerable.

Furthermore, the number of learners in farm schools is still declining due to the migration of farm workers to urban areas. Drought, the strive towards owning land of their own, as well as the attractions of urban life are the main driving forces behind migration. Since 1995 the farm school population in the Free State declined from 105 000 to a mere 60 000 in 2000 (FS DoE 2000). In this process more than 400 farm schools had to be closed. Similar tendencies occur in other provinces. For example, in the Eastern Cape province the existence of 700 farm schools are threatened, as the DoE cannot make an additional R14 million ($1,87 M) available to meet its contractual obligations to these schools dating back to 1997 (*Teacher* 2000a).

The Conditions at Free State Farm Schools

Infrastructure

In Tab. 1 the infrastructural shortages at farm schools in the province are indicated (FS DoE 2000). It is obvious that the infrastructure and support structures are not conducive to quality education.

Condition	Number of schools	%
Buildings in a state of disrepair	243	16
Schools without water within walking distance	249	16
Schools without electricity	384	25
Schools without telephones	1365	89
Schools with inadequate toilet facilities	172	11
Schools that lack recreational and sporting facilities	1534	100
Schools that lack access to computers	1334	86
Total No. of schools	**1534**	**100**

Table 1: Infrastructural shortages at farm schools in the Free State, 2000

Few schools have access to printed media other than textbooks. The educational TV programmes broadcast by the South African Broadcasting Company (SABC) are not accessible due to lack of electricity and equipment. Some schools utilize the School Radio Service. Periodicals and newspapers are not available in most cases, not even a classroom collection of books. Some farm owners pass on old copies to schools. An investigation by Khulisa Management Services (1998 p.17) revealed a low literacy assessment which is partially ascribed to insufficient learning materials.

Educators

Unfortunately the remoteness of the schools and the lack of infrastructure (including dwellings for teachers) only attracted teachers with low qualifications to farm schools. Even in 2000 a significant number of educators are still regarded as underqualified. As these teachers are deployed at farm schools it implies that their learners cannot reap the full benefit of education. A total of 6142 educators (24.4%) out of 25128 in the Free State fall in this category (FS DoE 2000). Most of these teachers are attached to farm schools. The recent

report on Education for All (EFA) for South Africa (DoE 1999) highlights several discrepancies in the education system. It states, among others, that capacity-building of educators and low morale amongst educators and principals need to be addressed. The report specifically stresses the point that excellence in teaching and learning cannot be realized where educators and school managers suffer from low morale and have negative attitudes toward the profession (p.42).

Initiatives to Improve the Quality of Farm School Education

Status of Farm schools

The national DoE has taken the initiative to negotiate with farmers to sign agreements with the provincial departments in order to change the status of farms schools to that of public schools on private property. This would enable the various departments of education to fund education in these schools on the same basis as for ordinary public schools. The agreement also protects the rights of farm owners. The owner must approve matters like school hours, access routes, developments on the school site as well visitors to the school. The National Minister, Professor Kader Asmal, called on all role-players to ensure the speedy signing of agreements as "agreements are entered into for the sake of our children, who deserve the best" (DoE 2000a p.1).

A national conference on farm schools was held on 13 May 2000 at Midrand near Johannesburg to address the needs pertaining to farm school education. In his opening address Prof. Asmal called upon all stakeholders to put aside political considerations and rather put heads together to identify blockages and to seek ways to remedy the blockages (DoE 2000b).

Several provincial departments organized workshops to interact with stakeholders in an attempt to get agreements signed and to pave the way for quality education in farm schools. In the Northern Province special attention is paid to improve learning and teaching in multi-grade farm schools. The Member of the Executive Committee (MEC) for Education, Edgar Mushwana, expressed his appreciation towards farmers who are donating land for the education of rural children (*African Eye News Service* 27 September 2000 p.1).

The Free State Department of Education organized a strategic planning workshop with regard to farm schools on 29 September 2000. The main emphasis was on the following:

- The signing of agreements.
- Learning and teaching effectiveness.
- Physical facilities and resources.
- Role of school governing bodies.

The MEC for Education in the Province, Papi Kganare, announced in the Legislature that schools where no agreement was signed before the end of 2000 will most likely be closed, as they cannot exist outside the framework of the new agreement. However, the department would determine beforehand what the impact would be in terms of learners in those schools (*Volksblad* 14 October 2000). The MEC also announced that schools where agreements had been signed would be eligible to apply for support in the order in which the agreements had been signed (p.1).

Technology-enhanced Education

The outcomes–based model, Curriculum 2005, is in the process of being implemented in South African schools. The ideal is to move away from the stereo-typed teaching methods and passive learning to a learner-centered approach in which the learner is actively engaged in constructing his/her own knowledge and comprehension. The model lends itself toward a resource-based or technology-enhanced approach. A ministerial investigation into technology-enhanced learning (Technology Enhanced Learning Investigation, TELI) has been undertaken parallel to the introduction of Curriculum 2005 since 1995. TELI regards its role against the background, and in complete harmony with the objectives, values and principles of Curriculum 2005. Several reports have already been published and both national and provincial workshops presented.

The private sector as well as non-governmental organizations have also taken the initiative to create education-related Web sites. *The Teacher* (online version of The Mail and Guardian print publication) and *Naspers SkoolNet Sunday Times Education Online Siyafunda*, sponsored by the First National Bank (FNB), are examples. These sites typically provide online visibility for existing educational involvement (for example Naspers's *Koerante in die Klaskamer* program) or media coverage of education (Sunday Times Top 100 Schools Survey). Cyberschool Africa as well as The Learning Channel provides excellent on-line access for

learners and educations. The Dial-a-Teacher concept, which was introduced in March 2000, literally bring any learner in direct contact which an experienced teacher to solve specific problems. Unfortunately access to these fascinating developments is limited to those who are connected.

The introduction of technology-enhanced learning creates as many problems as it is trying to solve, and may even serve to widen the gap between advantaged and disadvantaged communities even further. The lack of infrastructure and skills in poorer communities; maintenance of equipment in remote areas; as well as lack of funds to acquire hardware and software, are some of the major stumbling-blocks preventing the implementation of technology-enhanced learning on a large scale. In addition to the lack of infrastructure mentioned, the introduction of modern technology in the farm school environment is more than just an ordinary challenge. Therefore alternative ways and means to implement these concepts properly should be looked into. And it is here where the possibility of solar energy has to be looked into.

The utilization of solar power in schools is not a new concept. Several projects are currently running in developed countries, usually driven by environmentalists, where the emphasis is on the beauty of clean renewable solar power as an alternative to electricity generated in the conventional way (see www.ITcorp.com/. However, in the rural South Africa, solar power may often be the only way of getting a rural school connected to the outside world. One of the best-known examples of the utilization of solar energy in the country's school system is Myeka High School in the Kwazulu Natal Midlands. This school got solar panels for lighting purposes in 1995, but soon realized that the use of the solar energy should be optimized to bring learners in contact with computer technology as well. This ideal was achieved when twenty computers were donated to the school and three of the educators trained to teach computer skills at the school.

It is against this background, as outlined in the first part of the paper, that the story of Gelukwaarts should be told.

The Gelukwaarts Story of Success

Born out of Sorrow

The Gelukwaarts Agricultural and Hotel School was established in June 1997 when three small farm schools in the South Eastern Free State in the district Vanstadensrus magisterial district amalgamated. The name is derived from the Afrikaans name of the farm on which the school is situated and literally means "towards luck or happiness". As remarked by the present headmaster, Daniel Wilken, the school was born out of sorrow after the cold-blooded murder on the owner of Gelukwaarts, Neels Wilken, and a fellow farmer, Hennie Bekker, on Christmas Eve 1993. The farmers in the particular area, referred to as the "Moot", afterwards had an in-depth discussion with all the role-players in order to stabilize again and to establish the needs of the farming community as far as education was concerned. Eventually it was clear there was a great need for education, especially secondary education in that remote corner of the province.

Although the three amalgamated schools function as a single school, the three educators and learners were still accommodated on three sites as none of the schools could accommodate all the learners. The first step was to negotiate with the Department of Education for the provision of additional classrooms to accommodate everybody on one site. Two new educators were appointed when two storerooms were made available on one of the farms. But even in 2000 the five educators are still teaching 160 learners in ten grades in just four classrooms. As from 2001 two more posts will be provided by the department, which will alleviate the pressure to some extent.

Developments

During October 2000 all the learners and educators moved to the present site. A donation by the National Union of Mineworkers enabled the school to erect three classrooms while the community added a bookstore to the complex. The bookstore is currently utilized as a classroom. The department erected a fence and will shortly start with the erection of two more classrooms. Although still not ideal, the school will be able to perform most of its functions under one roof as from 2001, except for the practical work in Farm Mechanics, Hotel Keeping and Catering which are carried out in the workshops and kitchens of adjacent farms. Extramural activities take place on two afternoons after school while two more afternoons are used for practical work. The land next to the school site is already ploughed and a vegetable garden will soon be established.

Facilities for sports are almost non-existent, however. During a visit to Gelukwaarts, Danie remarked, "We don't have anything, just an incredibly lively spirit". He showed me the athletics track, a dirt road leading to an adjacent farm. The soccer and netball fields are part of a paddock. A patch of well-known Wepener sand

(for building purposes) serves as the pit for long jump practice. Despite the meager facilities, the school recently set five athletics records during a competition for farm schools held at Wepener. The local farmers will transport athletes who qualified for the regional competition.

A unique school fee system was also introduced. The monthly school fee is based on what the parents expect from the school. Once a budget has been drawn up to cover the expectations, the parents must indicate how much they can contribute towards the expenses. During the negotiations the staff then would also make a pledge to provide the outstanding amount by means of fund-raising. Thus far the scheme worked very well and school fees are paid regularly. Danie is also negotiating with the Department of Agriculture in the province to secure funds to start pig farming on the school premises. Every grade eight learner will be provided with two pigs and sufficient funds to buy food. When the pigs are sold, one-third of the profit will go to the school fund, one-third to a savings account for the learner and the remainder will be used to pay the school fees of the learner.

Travelling long distances on foot to school was also a problem until Danie solved it by obtaining second-hand bicycles from the Far East. These bicycles are rented at a nominal fee to learners. At the end of each year a competition is held to identify three learners who looked after their bicycles very well. These learners will get their bicycles for free for the following year.

Linking Up

In spite of all his efforts to upgrade and expand the infrastructure and extramural activities at the school, Danie realized that his school was still tucked away in a remote corner of the province. Learners and parents continued their lives in isolation from the rest of the world. Occasional visits to the town of Wepener, some 35 km away, was the furthest trip that could be undertaken by most of them. Much more needed to be done in order to make an impact on the lives of these people. Danie wrote dozens of letters, made presentations and paid visits to a number of institutions and organizations. Ultimately his dedication, perseverance and extraordinary patience were rewarded when some sponsors decided that his school was not an ordinary farm school and should be given the opportunity to cross the Rubicon. A computer company provided a satellite dish, solar panels and a cell phone, while an insurance company donated six computers.

The utilization of modern technology is the greatest achievement of all that happened since 1997 at Gelukwaarts. Contact has not only been established with the Department of Education to receive circulars and survey forms, but learners and their parents now have regular access to the latest news by accessing Web sites like News24.com. The headlines are printed and pinned to notice boards where learners can look at it on a daily basis. There is no further need to collect old newspapers when the information can be obtained directly from the Net!

Teaching and learning are enhanced further by utilizing the excellent material from The Learning Channel and CyberSchool Africa. On-line access to the distance education programs of several institutions is also no longer a dream but a reality. Since the installation of the satellite dish, the school established a wide network of interested parties and supporters of the school by exchanging E-mail messages (gelukwaartslhs@mweb.co.za).

Another exciting development is the utilization of the classrooms for the Adult Basic Education Programme (ABET). In the evenings two of the teachers teach 80 adults basic literacy and numeracy skills. It is envisaged that these learners will eventually also be taught basic computer skills.

Recognition

The success story of a farm school, fired by the enthusiasm and dedication of one man and his wife, made the headlines. All of a sudden the once-forgotten school was in the limelight. Perhaps the greatest honour bestowed upon the school thus far, was Danie being one of 40 educators nationwide who received a National Teacher Award on 26 October from the National Minister, Kader Asmal, in Pretoria (*Teacher* 2000b). This achievement is best described in Danie's own words: "It was a fascinating experience to be one of forty dedicated teachers who have one thing in common - a vision for their schools and their learners spotting a challenge in every problem". In his opening address at the awards ceremony, the Minister highlighted the qualities of the ideal teacher as follows: "The teacher who is able to transport the learners beyond the boundaries of today and into the possibilities of the future is the one we have been looking for in the teacher awards process. The passion, the identification with the learners, and the vision to see beyond the often-

depressing realities of daily life, are the qualities we seek. For as we are, so the learners will learn" (DoE 2000c p.3).

The Future

According to Danie, the success story of Gelukwaarts is not the end but just the beginning of a new era for the provision of education to farm schools in the province. He is in continuous discussion with all role-players like the Government, the Agricultural Union, Tswelopele (a non-governmental organization aimed at the upliftment of farm schools), as well as the private sector. As a result of his deliberations many more farm schools will benefit from a grant of R12 M ($1.6 M) by the National Lottery Trust. Three companies will provide satellite dishes, cell phones, solar panels and computer literacy training to schools and the community in order to promote computer literacy and access to information on the Internet. Even farmers will benefit from these developments, not only to increase communication between the farmer and the school, but also to provide farmers with the latest information regarding prices of their products, as well as information on agricultural matters in general. Danie sees this as a way to acknowledge the willingness and positive attitude of those farmers who have made contributions towards the education of learners on their farms.

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